Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
PRINTING
FINISHING

OCTOBER 20, 1947
VOLUME 36, No. 21

AMERICAN

# DYESTUFF REPORTER

## A.A.T.C.C. CONVENTION NUMBER

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# *Never were there such whites...*

obtainable on cotton, viscose rayon and linen fibres before the advent of Geigy's

### *TINOPAL BVA* *

Introducing an entirely new physical (optical) principle, an intensive fluorescence is created without dulling the shade; rather is the reflected white light increased incomparably.

This is more readily understood when it is considered that Tinopal BVA is not a common pigment bluing agent, but rather a substantive colorless product. Consequently it does not *add* a blue coloring matter to a yellow ground, resulting logically in a greyish shade and a loss in reflected light.

You just cannot believe what revolutionary whites are possible until you have actually seen the results obtained with Tinopal BVA.

**Patent applied for.*

## GEIGY COMPANY, INC.

89-91 BARCLAY STREET
Boston · Providence
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Toronto

Geigy

NEW YORK—NEW YORK
In Great Britain
The Geigy Co., Ltd.
National Buildings
Parsonage, Manchester

*Dyestuff Makers Since 1859*


OFFICIAL PUBLICATION
of the
PROCEEDINGS
AMERICAN ASSOCIATION
OF TEXTILE CHEMISTS
AND COLORISTS

*For Superior*

# ANILINE BLACKS

1. GOOD PRINTING PROPERTIES
2. MINIMUM TENDERING OF THE FABRIC
3. DENSE, PLEASING TONE OF SHADE
4. EASE OF PREPARATION
5. FREEDOM FROM GRIT

## Order...CYANAMID'S AERO* BRAND

**YELLOW PRUSSIATE OF SODA**
[Sodium Ferrocyanide $Na_4Fe(CN)_6 \cdot 10H_2O$]

**YELLOW PRUSSIATE OF POTASH**
[Potassium Ferrocyanide $K_4Fe(CN)_6 \cdot 3H_2O$]

PRUSSIATE ANILINE BLACKS are adaptable for printing cotton and rayon in a wide variety of styles in combination with vat dyes, rapid fasts and steam colors. This process is most effective in reducing tendering of the fabric, and minimizes the electrolytic effect on the doctor blade.

**When Ordering Prussiates Specify AERO BRAND, your assurance of . . .**

1. Uniformly high quality over 99% Yellow Prussiate of Soda or Yellow Prussiate of Potash.
2. Close chemical control from basic raw materials to the finished product.
3. Small crystalline form dissolves readily in hot or cold water.

•

*For dependable supply . . . for authoritative technical service . . . call on Cyanamid.*

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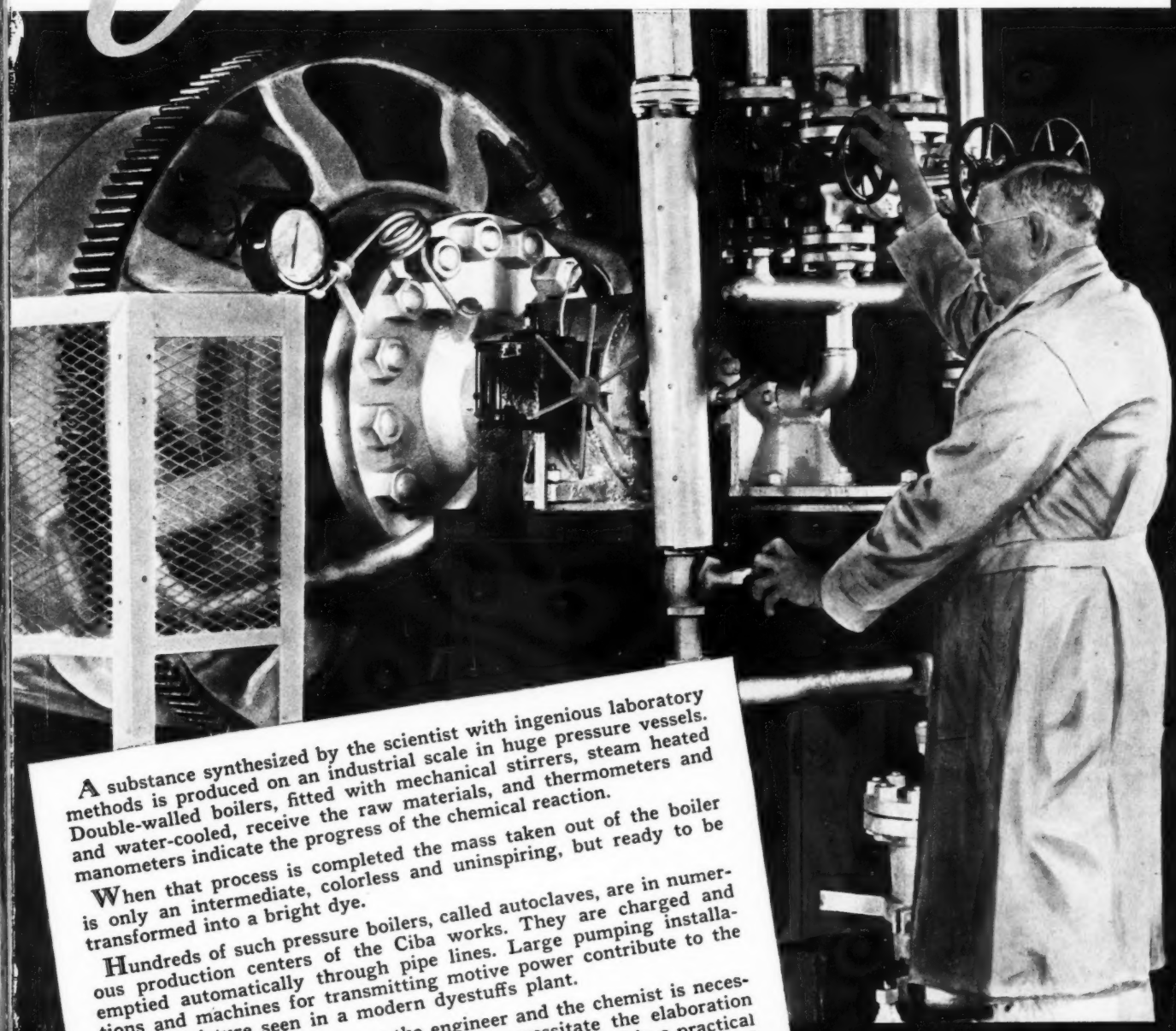
**AMONG CYANAMID PRODUCTS FOR THE TEXTILE INDUSTRY ARE:**
Penetrants, Softeners, Finishes, Sizing Compounds, DECERESOL** Wetting Agents, PARAMUL* 115 Water Repellent, and other specialties and Heavy Chemicals. For low-cost chemical equivalent of distilled $H_2O$ . . . FILT-R-STIL** Demineralizing Units.

*Trade-mark **Reg. U. S. Pat. Off.



American Dyestuff Reporter, Vol. 36, No. 21, October 20, 1947. Published every other Monday. Copyright, 1947, by Howes Publishing Co., One Madison Ave., New York 10, N. Y. Domestic subscription, $5.00; Canadian, $6.00; Foreign, $6.00. Entered as second-class matter, Nov. 6, 1919, at the New York, N. Y., Post Office, under the act of March 3, 1879.

# *Ciba* DYESTUFF GLIMPSES



A substance synthesized by the scientist with ingenious laboratory methods is produced on an industrial scale in huge pressure vessels. Double-walled boilers, fitted with mechanical stirrers, steam heated and water-cooled, receive the raw materials, and thermometers and manometers indicate the progress of the chemical reaction.

When that process is completed the mass taken out of the boiler is only an intermediate, colorless and uninspiring, but ready to be transformed into a bright dye.

Hundreds of such pressure boilers, called autoclaves, are in numerous production centers of the Ciba works. They are charged and emptied automatically through pipe lines. Large pumping installations and machines for transmitting motive power contribute to the complex picture seen in a modern dyestuffs plant.

Close collaboration between the engineer and the chemist is necessary, as chemical discoveries frequently necessitate the elaboration of absolutely new techniques before they can be utilized in a practical manner. Consequently, new methods of production have to be devised from time to time in the dyestuffs factory and obsolete methods discarded. There is hardly an industrial enterprise so incessantly in a stage of development as a large chemical concern.

DYESTUFFS • CHEMICALS • INTERMEDIATES

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VAT DYES OF THE DOW CHEMICAL COMPANY

A COMPLETE RANGE OF FAST-TO-LIGHT DYES BEFORE AND AFTER UREA-FORMALDEHYDE RESIN TREATMENT.

# welcome

to the 26th National Convention of the AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

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Behind these products stands STEIN HALL Laboratory Procedure—an assurance of quality for 81 years.

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# Artistry in .. Chemistry

**VELVAMINE K-90**

An improved softening and finishing agent for use on all types of fabrics. It imparts an odorless finish which is resistant to washing and dry cleaning. Can be used as a substitute for sulphonated oils, tallows and other softeners. Its use eliminates yellowing and rancidity often encountered with the usual fatty type of softening agents.

**PERMALENE SOL**

A penetrant and cleanser designed for use on all fabrics especially those that are tightly woven and highly twisted. Recommended for pad-dyeing where it insures uniform and thorough penetration. It is of great assistance where low temperature dyeings are necessary. Non-foaming at high speeds, it is stable in neutral, alkaline and acid solutions.

**VELVAMINE GF**

Velvamine GF is a blend of amines and softeners designed to protect acetate colors from gas or fume fading. It resists removal by drycleaning and, when used on mixed fabrics, has a minimum effect on the shade and light fastness of the direct colors. Velvamine GF produces a soft, full hand and does not affect the appearance of the treated fabrics.

**PERMALENE WS**

A white powder soluble in water at 80° F. Capable of dispersing iron, calcium and magnesium salts and redissolving or re-dispersing precipitated compounds of these metals. It is so highly buffered that the pH of its solution is practically independent of its concentration.

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**MODEL UKSAG PACKAGE DYEING MACHINES . . . closed pressure extractors—Open Stand Pressure Dryers.**

**Entire operation accomplished in one complete cycle on the same material carriers. All Stainless Steel Construction.**

**Standard Fabricators**
INCORPORATED

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*BUILDERS OF*

Cotton and Wool Dyeing Machines — for beams — Package — Raw Stock — Skeins — Rayon Cakes — Dye Spindles — Perforated Tubes — Centrifugal Pumps — Extractors and Dryers.

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Ideal combinations for perfect coloring throughout the red range and into gold . . . everything you need for complete satisfaction in Napthol dyeing and printing. » » » Let us demonstrate the A.A.P. way to best results with the Napthol process; just call our nearest office, and an A.A.P. technician will gladly visit your plant.

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# The *Only* Machine That Will Dye

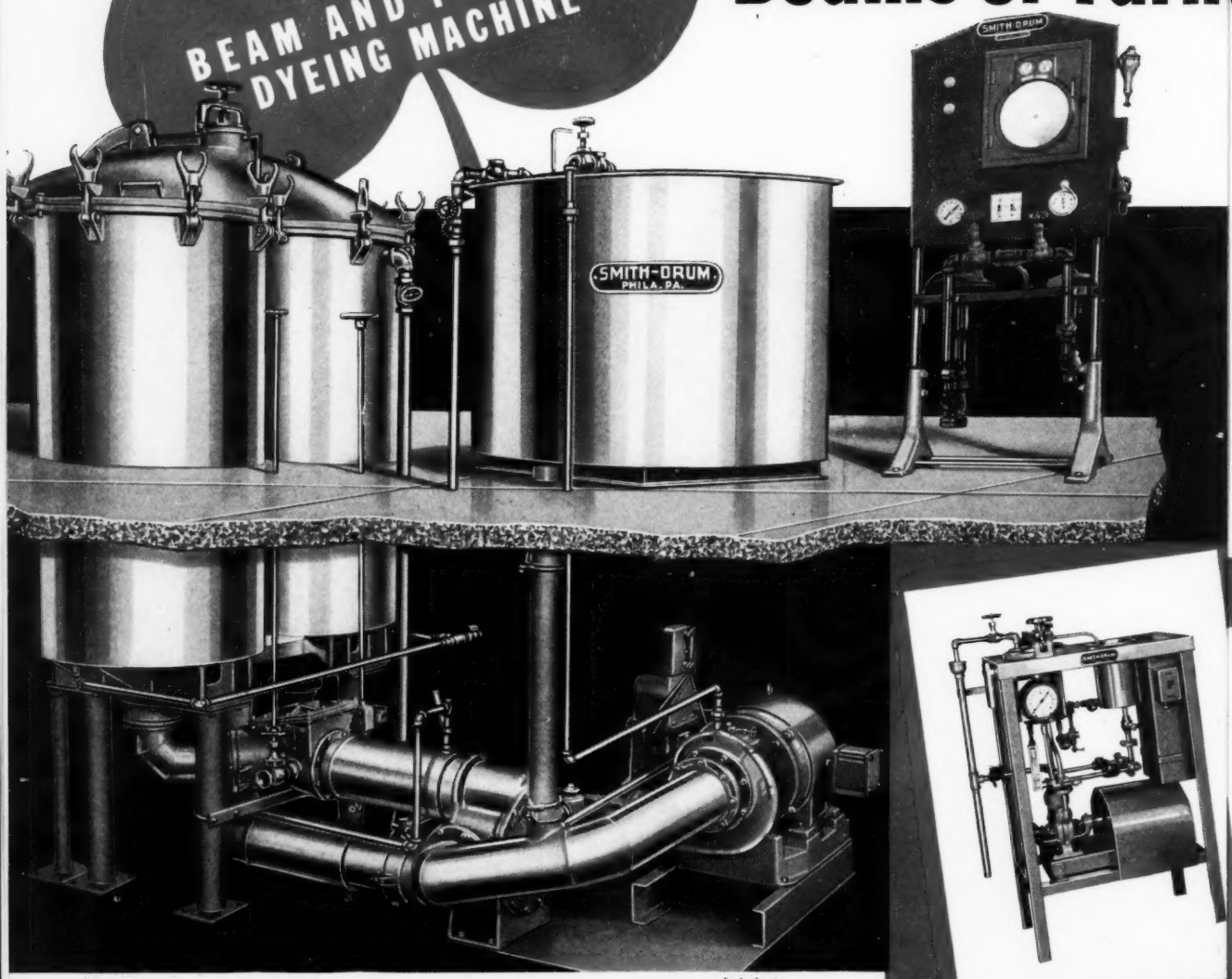
# 1, 4

## Beams or Yarn Car

SMITH-DRUM

*Clover Leaf*

BEAM AND PACKAGE DYEING MACHINE

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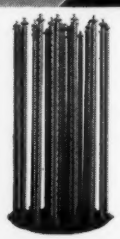
**SAMPLE PACKAGE DYEING MACHINE**
This machine, which dyes a single package, is for use in determining formulae to be used in larger machines. Sample is dyed under same conditions and control as in larger machines.

Stainless steel dye beams are manufactured by Smith, Drum for use with the Clover-Leaf Beam and Package Dyeing Machine.

Special package carrier supplied with Smith-Drum Clover-Leaf Machine. This is the type used with packages wound on large diameter tubes or springs.



# 1, 2, 3 or 4

## Carriers Under *Identical* Conditions

This revolutionary Smith-Drum Machine makes it possible, for the first time, to dye as many as *four* beams or yarn carriers at once, in the same machine, with exactly the same liquor ratio as required to dye only *one!* This results in absolutely uniform dyeing . . . because each beam or package carrier is dyed at identical temperature, pressure, flow and with the same additions of dyestuffs.

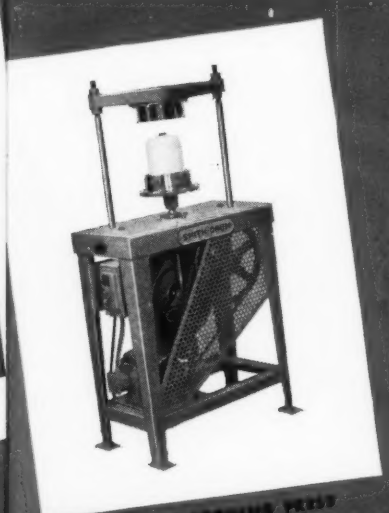
When less than a full load is to be dyed, pressure flow and liquor ratio are automatically adjusted so that they remain the same as when dyeing a full load. Furthermore, pressure and flow can be varied at will by the operator, to allow for various sized beams.

This machine not only assures uniform dyeing results but also permits definite economies in operation. It is equipped with valve to permit extraction of yarn by air pressure before it is removed from the dye tank.

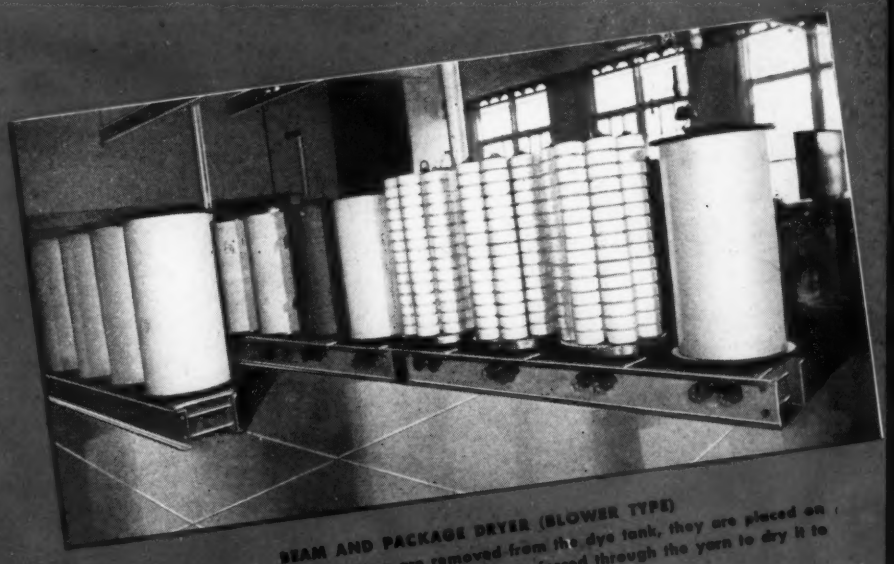
Other Smith-Drum auxiliary equipment for preparing the yarn for dyeing and for drying the yarn after extraction is illustrated and briefly described below. Complete information will be sent you upon request. Write

**SMITH, DRUM & COMPANY**

**Allegheny Ave. at 5th St., Philadelphia 33, Pa.**



**PACKAGE FORMING PRESS**
This machine properly prepares the package for dyeing by crimping the edges of the package to aid penetration of the dye liquor at that point.



**BEAM AND PACKAGE DRYER (BLOWER TYPE)**
After beams or package carriers are removed from the dye tank, they are placed on the ports of this Smith-Drum Dryer. Heated air is forced through the yarn to dry it to the desired moisture content.

NYANZA

ANILINE & ALIZARINE COLORS

•

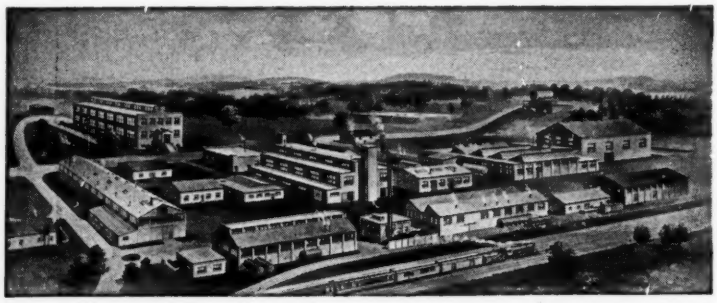
TEXTILE CHEMICALS

•

FINISHING MATERIALS

FOR

WOOL — COTTON — RAYON — ACETATE
AND MIXED FIBERS



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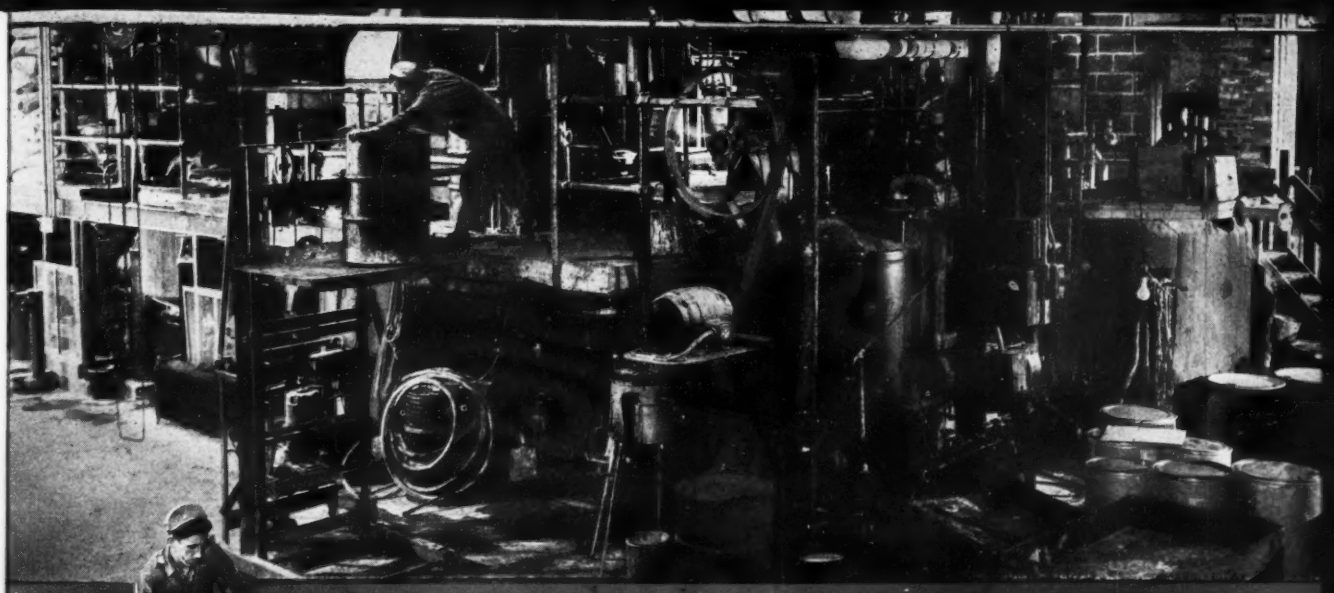
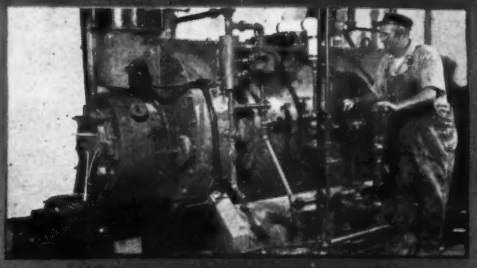
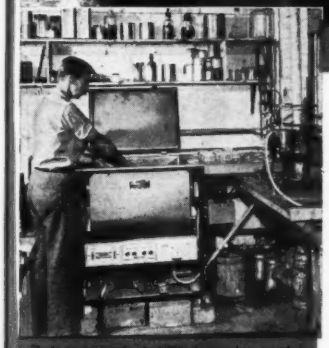


View showing modern sulfonation and high-temperature equipment

Above { *Left:* Cleaning stainless steel kettle
*Right:* [illegible]



High-pressure steam generator: one of first to be placed in civilian industry



Detergency test with Launderometer

Above: Large [illegible]
Below: Loading platform—Shipping Department

DEXTER
INDUSTRY'S RIGHT HAND

Under this trademark — symbolic of our service to the textile industry—we manufacture a complete line of processing agents for use with Wool, Cotton, Synthetics, Hosiery and Knitwear.

*These include the widely-known products*

**KOPAN • DYPENOL • TELKANOL**
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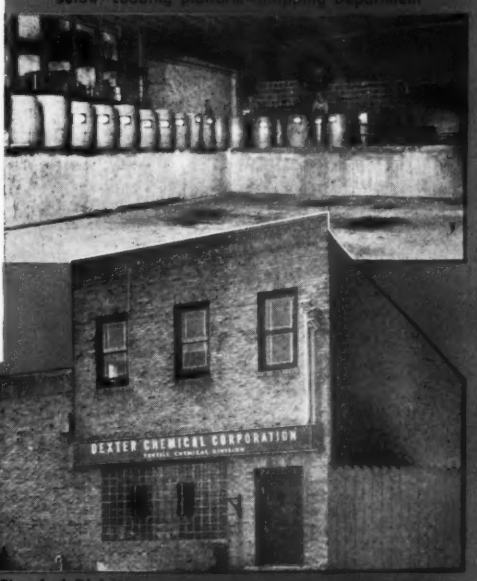
*for the Textile Industry*

**DEXTER CHEMICAL CORPORATION**
*TEXTILE CHEMICAL DIVISION*
**819 Edgewater Road, New York 59, N. Y.**

Preparing sample finishes on fabrics —section of textile laboratory




Office, Shipping and Receiving Departments—Textile Chemical Division

# HYMOLON "K"

## 100% ACTIVE

## Synthetic Detergent

**STABLE**

**HYMOLON K** is stable in hard water, acids and alkalis and is compatible with soap. It prevents scum formation and promotes more level dyeing. Hymolon K is a *liquid* detergent and as such is preferred for ease of handling and use.

**ECONOMICAL**

**HYMOLON K** is 100% active, contains no water, salts or cheap alkalies, and shows about 4 times the scouring of a good soap. Accordingly, there is less material to ship and handle. Hymolon K economically combines in one product good wetting-out and excellent detergency. The concentration required varies with the type of operation, usually 0.1 to 0.4% on the weight of the goods.

**VERSATILE**

**HYMOLON K** is recommended for scouring and dyeing operations for all types of textile fibers; for unsurpassed detergency of all forms of woolens; and for the kier boiling of cotton. It gives a heavy, continuous, foamy bath and is especially useful in cleaning operations where emulsification and dispersion of spinning waxes or oils are of importance.

### *Hartex Products*

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| Rayon Oils & Sizes | Conditioning Agents | Cationic Softeners |
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**HART PRODUCTS CORPORATION**
**1440 Broadway, New York, N. Y.**

# *Hart Products*

*based on research*

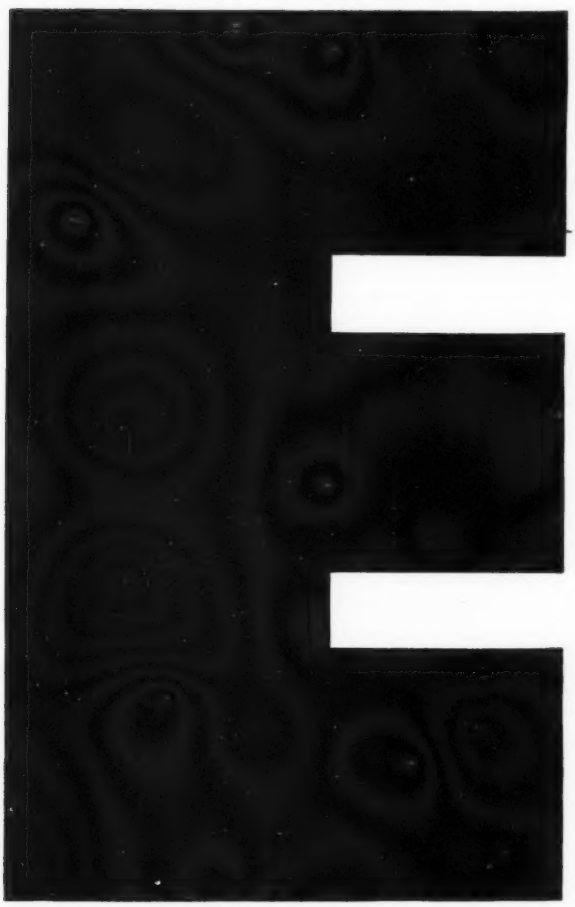
# EASTONE RUBINE R

## For Plain or Dischargeable Dyeing of Acetate Rayon

EASTONE RUBINE R, a distinctive development among rubine dyes, is a straight dyestuff. It can be dyed with equal success at temperatures used for both jig and box work. Low color percentages for pink dyeings have levelness and uniformity of shade. The deep rubine shades have good fastness to crocking. The general commercial fastness properties of Rubine R are satisfactory for its many recommended uses.

Through painstaking research and formulation, Eastman laboratories have produced an extensive line of dyestuffs for use with cellulose acetate rayon fibers, fabrics, and blends.

For information on Eastman Acetate Dyestuffs and their application to synthetic fibers, write to the TENNESSEE EASTMAN CORPORATION (Subsidiary of Eastman Kodak Company), KINGSPORT, TENNESSEE.



**Eastman**

**ACETATE DYESTUFFS**

# ONYX IONICS

*Newsworthy Items for Textile Technologists and Production Men*

October, 1947

## Protection Against Alkali Damage

A very small amount of Onyx Stearo Glyceryl Sulfate N added to the vat liquor reduces the damaging effect of alkali. In vat dyeing of wool or silk fabrics, for example, ½-lb. of this material to 1,000 gal. of liquor is ample for such protection.

Stearo Glyceryl Sulfate N is a highly sulfated tallow with a materially higher $SO_3$ content than ordinary sulfonated tallows. It has a wide field of application for softening, warp size lubrication, starch plasticizing, and for providing body and/or thickness for all types of textiles.

It has materially higher resistance to hard water and electrolytes, and to yellowing and rancidity than ordinary sulfonated tallows.

Stearo Glyceryl Sulfate N is much more readily soluble than conventional tallows. It offers notable improvements in softening and plasticizing effects, particularly on all types of cotton, rayon and acetate constructions.

## Stiffness for Organdies, Ninons and Marquisettes

is most dependably obtained by the use of Onyx Resin 362. This viscous dispersion of vinyl resin contains 52-54% solids, and has no solvent content. The dispersion is readily applied in the jig, pad or quetsch, but no curing or special after treatment is required.

Resin 362 not only imparts the extra stiffness wanted in the above mentioned textiles, but can be manipulated to provide any required degree of stiffness from moderate to extreme on any fabric.

## Onyx Technical Service

Use-formulae for any Onyx product are readily available and can usually be worked out in the mill without calling in an Onyx technical representative.

However, there are often times when the application calls for definite results, on which the experience of an Onyx man with the use of a material in many other mills will be of great value in working out a suitable use-formula.

In any event, you are free to call on the knowledge and experience of these trained textile service men, not only on problems connected with the use of Onyx products, but on any other related textile production problems on which you feel they might be of assistance.

## For a Highly Versatile Range of Effects in Body and Stiffness for Cotton, Acetate and Rayon

Onyx Xyno Resin AA40 is a general purpose resin finish offering a wide range of effects in varying degrees of stiffness and body for cotton, rayon and acetate constructions.

This resin dispersion is readily manipulated to give any desired finish from a full, mellow hand to a good stiff body on an unusual variety of fabric constructions. It does not impair luster, and dries to a clear, tough film. Goods are treated in the usual manner, with no need for curing or for high temperatures to set the resin. Moreover, this finish

shows satisfactory resistance to household laundering.

Xyno Resin AA40 is a water dispersion of a thermoplastic synthetic resin. It contains no solvents and is completely stable at all dilutions. Compatible with alkalies, dilute acids and hard water.

For complete data on this resin finish, write for Onyx Technical Bulletin 14-T.

## If You Want a Smooth, Firm, Waxy Hand . . .

Onyxsan HSB is another member of the versatile Onyxsan family that deserves your attention. Like all other Onyxsans, it is cation-active, providing a *permanent* finish on cotton, rayon, bemberg and acetate textiles.

Onyxsan HSB is easy to apply in the print washer, jig, quetsch, dye beck or starch mangle, exhausting *into* the fiber to produce its unique effects. An Onyxsan finish is due to changes produced within the yarn, not in any way comparable to the superficial action of surface lubricants.

Although the finish is not as durable on aralac, silk, wool and mixed constructions containing these fibers, Onyxsan HSB is widely used on these textiles for its characteristic waxy finish.

## NEW DEVELOPMENTS

*For Further Details Write Onyx*

***Cationic, Lasting Moth-Proofing*** with Imularv P or Imularv S deserves your investigation. Either material also imparts outstanding bacteriostatic and fungistatic properties. Imularv P is used in water solution; Imularv S in organic solvents. No. 68

•

***For Improved Wetting Action in Acid Solutions*** NSAE Paste has many valuable applications, including more effective acid carbonization of wool and improved leveling of acid colors in wool dyeing. No. 69

•

***For Added Absorbency in Towelling and Similar Textiles,*** Phi-O-Sol WA offers interesting possibilities. It provides unusually effective wetting action and complete compatibility with all types of dyeing, bleaching and finishing materials except cation-active agents. No. 70

•

***Economical, Durable, Easily Applied Water Repellency*** on cotton-rayon, cotton-acetate and many all-rayon, acetate and nylon constructions is assured by Repel-O-Tex D3 and D4 at a cost no greater than that of ordinary fugitive repellent finishes. No. 71

•

***A Dry, "Springy" Hand on All Types of Fabrics,*** particularly nettings in nylon, acetate or rayon, is provided by Onyx Resin S-69, a copolymer resin dispersion of fine particle size. No. 72

## Non-Ionic Dispersion and Emulsification

Neutronyx 330 is a non-ionic surface-active agent with exceptional dispersing properties combined with unusually high emulsifying action. It is an excellent detergent due to its wetting action plus solubilizing and emulsifying effects on oils and greases.

Neutronyx 330 has many outstanding applications in textile finishing. It is unequalled as an auxiliary detergent in hard water conditions, due to its non-ionic character. It is particularly useful as a scouring assistant for acetate and rayon. An excellent dispersing and solubilizing agent for acetate colors, Neutronyx 330 also does a highly satisfactory job in dispersing pigments in organic vehicles.

Its non-ionic property makes Neutronyx 330 an effective agent to insure more even exhaustion of anionic or cationic hosiery finishes. It has shown good results in improving wool chlorination in the shrink-proofing operation.

Write for Technical Bulletin 1-T for complete data.

onyx

**Onyx Oil & Chemical Company**

JERSEY CITY 2, N. J.

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*In Canada: Onyx Oil & Chemical Co., Ltd. Montreal, Toronto, St. Johns, Que.*

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INDANTHRENE
UNSURPASSED
IN FASTNESS
TO SUNLIGHT
AND WASHING

GENERAL DYESTUFF CORPORATION

# Lanascour

## DREW'S NEW WOOL SCOURING AGENT

Combines the well-known advantages of soap with the most desirable qualities of synthetic detergents.

***LANASCOUR*** was developed on specific suggestion from leading wool processors

FOR GREASE WOOL SCOURING
YARN SCOURING
BACK WASHING TOP
PIECE GOODS WASHING

*A perfectly balanced compound*

**Mill Demonstrations Solicited**

# E. F. DREW & CO., INC.

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# IT'S TRUE...

"LIFE IS NOT ALL BEER AND SKITTLES," FOLKS HAVE SAID FOR HUNDREDS OF YEARS. BUT "SKITTLES" IS NOT SOMETHING TO EAT AS MOST HAVE THOUGHT ...IT'S THE WORLD'S OLDEST BOWLING GAME. FIRST PLAYED BY EARLIEST GERMANIC TRIBES, SKITTLING IS STILL A WEEKLY SPORT IN SOME ENGLISH VILLAGES. SKITTLERS THROW A WOODEN "CHEESE" THROUGH THE AIR TO HIT NINE PINS.

**STANDARD OIL COMPANY OF NEW JERSEY**
Elizabeth, N. J.—Baltimore, Md.—Richmond, Va.—Charleston, W. Va. Charlotte, N. C.—Columbia, S. C.—New Orleans, La.—Little Rock, Ark. Memphis, Tenn.

**STANDARD OIL COMPANY OF PENNSYLVANIA**
Philadelphia, Pa.

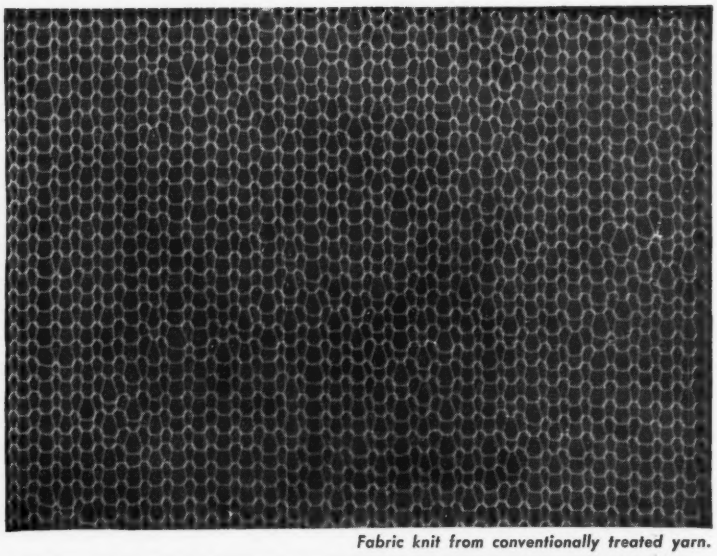
**COLONIAL BEACON OIL COMPANY**
Boston, Mass.—New York, N. Y.

# IT'S TRUE OF ESSO SOLVENTS

DURING THE LAST YEAR, TOTAL ESSO PETROLEUM SOLVENTS SALES WERE ENOUGH TO FULLY LOAD A TANK CAR TRAIN 71½ MILES LONG!

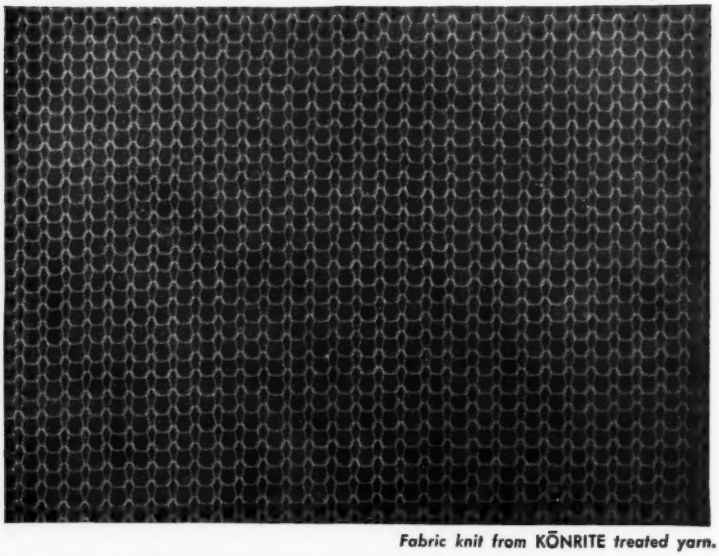
Hundreds of industries look to Esso Marketers for constant uniformity and suitability of solvents . . . and for friendly, dependable advice. Esso welcomes opportunities to assist with industrial solvents problems.

# Is your stitch like this



*Fabric knit from conventionally treated yarn.*

# or like this



*Fabric knit from* KŌNRITE *treated yarn.*

For the treatment of yarns for truly fine hosiery, Nopco presents KŌNRITE, a new and unique nylon coning oil. In Coning, Knitting, Seaming, KŌNRITE offers you:

**OUTSTANDING RESULTS...**

- ...*in Coning*—produces cones of proper density, practically eliminating overlaps, crossovers and underwinds
- ...increases cone production
- ...*in Knitting*—minimizes stripping of size—reduces pressoffs
- ...gives clear perfect stitch formation
- ...*in Seaming*—reduces roll...its strong defense against curling is a major factor in greatly increased hosiery production

**OUTSTANDING ADVANTAGES...**

- ...Controlled viscosity, assuring even distribution of oil on yarn
- ...New stitches firmly cemented through rapid drying action
- ...Prevention of softening in lagged yarn and fabric

*For full information on* KŌNRITE, *please write today.*

**NOPCO CHEMICAL COMPANY, Harrison, N. J.**

*Formerly National Oil Products Company*

BRANCHES: BOSTON • CHICAGO • CEDARTOWN, GA. • RICHMOND, CALIF.

**EVOLVED THROUGH RESEARCH** NOPCO

**Kōnrite** The Outstanding Nylon Coning Oil

**Ever name triplets?**

Monsanto had to recently . . . and it wasn't easy. You see, Monsanto's unique new textile chemical, Resloom . . . introduced first to make *rayons crush-resistant* . . . now has two wonderful, new "sister" applications: *making woolens washable, and making cottons wrinkle-resistant.* In brief, Resloom is the *basic* product; there are three variations in formula to do three different jobs.

The question arose: Should there be one name for all three of these applications . . . or three names, one each for each special function? There were good arguments for either choice.

Monsanto decided it would be less confusing and less burdensome to the trade to have one name, Resloom, already well-known. *BUT with this important variation:* the different formulation for each application was given an individual sub-title. Thus, Monsanto now has:

| | |
|---|---|
| 1 | **RESLOOM**—Formula R for Crush-Resistant Rayon |
| 2 | **RESLOOM**—Formula W for Washable Woolen |
| 3 | **RESLOOM**—Formula C for Wrinkle-Resistant Cotton |

Resloom, therefore, will mean generally . . . *lasting character and greater performance* to wool, cotton, rayon. And it will mean special properties for each major type of fiber, as indicated. Obviously, in blended fabrics Resloom will improve every part.

Monsanto is certain that this simplifying decision will work out to the greatest advantage for all concerned. You are invited to investigate any or all of these Resloom formulations for *your* products. Monsanto has an ambitious program of promotion for the months ahead . . . take advantage of it by taking advantage of Resloom . . . for crush-resistant rayons, washable woolens, wrinkle-resistant cottons. Address: MONSANTO CHEMICAL COMPANY, Textile Chemicals Department, 140 Federal St., Boston 10, Mass.

MONSANTO
CHEMICALS — PLASTICS

®Reg. U. S. Pat. Off.

**SERVING INDUSTRY . . . WHICH SERVES MANKIND**

# *Hooker Chemicals for Textiles*

If you are interested in bleaching, dyeing and finishing textiles, Hooker can supply many of the chemicals you need. Your work will be made easier, your operations will run smoothly and your product will be of uniform high quality when you use Hooker Chemicals.

Careful control combined with specially developed manufacturing techniques of Hooker Chemicals assures you of uniformly high quality in every shipment to your plant.

Listed below are some of the Hooker Chemicals that are serving the dye and textile industries. These and many others are listed in the Hooker General Products List, Bulletin 100. Technical data sheets are also available describing each product more completely. Just write "Bulletin 100" and the names of any products on which you would like more information on your letterhead and sign your name. The literature you want will be on its way by return mail.

| PRODUCT<br>*Chemical Formula; Molecular Weight* | HOOKER SPECIFICATIONS | SUGGESTED USES |
|---|---|---|
| **Aluminum Chloride Anhydrous**<br>$AlCl_3$; 133.3 | Aluminum Chloride ..... 98.5% Min.<br>Iron ..... 0.05% Max.<br>Non-sublimables in air at 950°C, 1.5% Max. | Catalyst in synthesis of dyestuffs and intermediates. |
| **Benzoic Acid-USP and Tech.**<br>$C_6H_5COOH$; 122.1 | Benzoic Acid ..... 99.3% Min.<br>Water ..... 0.2% Max. | Manufacture of dyes.<br>Mordant. |
| **CP—70**<br>$C_{24}H_{29}Cl_{21}$; 1063 | A chlorinated paraffin resin in powder form. Soluble in aromatic solvents, difficultly soluble in mineral spirits.<br>Chlorine ..... 71 ± 2%<br>Iron ..... 0.01% Max.<br>Softening range..... 90° to 100°C | Treating textiles to make water, fire and mildew-proof. |
| **Lauryl Pyridinium Chloride**<br>$C_5H_5N$ $(C_{12.6}H_{20.2})Cl$; 292.0 | Mottled tan, semi-solid. Solubility in water is 60 gms. per 100 gms. of water. Alkyl Pyridinium Chloride (Calc. as $C_{12}$)..... 85.0% Min. | Cationic detergent. Wetting and cleaning agent for textile fibers. As a leveling agent and color modifier in dyeing. |
| **Orthodichlorbenzene**<br>$C_6H_4Cl_2$; 147 | Clear, colorless liquid.<br>Freezing Point ..... −10° to −22°C<br>Boiling Range ..... 6° including 179°C | Manufacture of pyrocatechin, dye intermediates, other synthetic organic chemicals. Degreasing wool. |
| **Sodium Sulfhydrate**<br>NaSH; 56.1 | NaSH ..... 70 to 72%<br>Fe ..... 5 ppm Max.<br>$Na_2S$ ..... 0.25 to 2.5%<br>NaCl ..... 0.4 to 0.8%<br>$Na_2SO_3$, $NaHCO_3$ ..... 0.04 to 0.4%<br>Cu, Ni, Cr, Mn, Pb..... 1 ppm Max.<br>Water of crystallization..... 28 to 26% | Desulfurizing rayon; calico printing; in sulfur dye baths. |
| **Sodium Sulfide**<br>$Na_2S$; 78.1 | $Na_2S$ ..... 60 to 62%<br>Fe ..... 8 ppm Max.<br>NaCl ..... 1.5% Max.<br>Other Na Salts..... 2.0% Max.<br>Cu, Ni, Cr, Mn, Pb..... 1 ppm Max.<br>Water of crystallization..... 36.5 to 34.5% | Desulfurizing rayon; calico printing; in sulfur dye baths. |

**HOOKER ELECTROCHEMICAL COMPANY**

**HOOKER CHEMICALS**

**2 FORTY-SEVENTH ST., NIAGARA FALLS, N.Y.**
**New York, N.Y. Wilmington, Calif. Tacoma, Wash.**

**Caustic Soda** **Chlorine** **Muriatic Acid** **Paradichlorbenzene** 2140

# NOW... Redder Shades of Black

ON ACETATE RAYON WITH

## Hydroxanil "2R"*

Hydroxanil 2R has been developed in answer to popular demand for redder shades of acetate black than those produced through the use of Hydroxanil G. Hydroxanil 2R has all the superior qualities of Hydroxanil G, including, superior wash fastness, resistance to sublimation and perspiration fading.

**HYDROXANIL 2R** is used in the same manner as Hydroxanil G, and is ideal for producing *wash fast* developed black on acetate and rayon combination materials through the use of acetate developed black and rayon developed black in place of rayon direct black.

With Hydroxanil G and Hydroxanil S, a new member of the Hydroxanil family, a complete line of fast developed colors can be obtained on rayon, cotton and union materials.

**HYDROXANIL G** (formerly simply Hydroxanil), Hydroxanil 2R, and Hydroxanil S are currently available in commercial quantities and may be used to great advantage not only for their superior qualities but also to replace B.O.N. and Beta Naphthol.

MARCO PRODUCTS

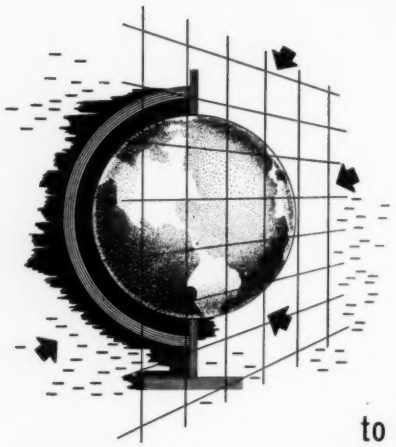
*Patent applied for

**Let us solve your developer problems during these days of developer shortages**

**MAHER COLOR & CHEMICAL CO.**

*FACTORIES AND LABORATORIES*

355 West Ontario Street, Chicago 10, Ill.
2327 East Eighth St., Los Angeles 21, Calif.



# *Spin the Globe...*

## There's a FALLEK Representative Everywhere!

### Here is your opportunity to secure World Wide Distribution for American Dyestuffs ...

**READ THESE FIGURES!**

*92%* of the world's total exports in Coal-Tar Colors, Dyes and Stains were supplied by Europe to the rest of the world.*

*4.6%* of the world's total exports in Coal-Tar Colors, Dyes, and Stains were supplied by the United States to the rest of the world.*

**With foreign production at a minimum level, now is the opportune time for American Suppliers to secure a solid foothold in the most lucrative overseas markets . . . and here is how FALLEK can help you:**

**FALLEK . . .** eliminates costly credit risks. *You receive your check when your goods are ready for shipment* . . . as simple as a domestic transaction, but larger profits.

**FALLEK . . .** creates an acceptance for your products throughout world markets that assures continuous business.

**FALLEK . . .** gains you the proper entree with leading firms of known responsibility.

**FALLEK . . .** gives you intelligent, daily sales coverage through representatives located in every world market.

**FALLEK . . .** means permanence, through long established outlets in Europe, Latin America, and the Orient.

**FALLEK . . .** saves you the detail handling and numerous expenses of operating an export department.

**FALLEK . . .** brings you men of wide experience, men highly skilled in the problems of world distribution . . . plus skilled technicians in every foreign office fully equipped to render all the technical information necessary to users of American Dyestuffs.

**American dyestuffs for textiles, leather, paper, etc., are in urgent demand throughout the world. You can realize a sizeable share of this business by making FALLEK your foreign selling agents. THIS is the time to safeguard profits against the hazards of "buyer's market" or a falling off in domestic demand, by developing a substantial export volume. FALLEK can do this for you.**

**U. S. Tariff Commission Report No. 19 last pre-war figures 1946*

***WRITE, WIRE OR PHONE FOR FURTHER INFORMATION.***

# FALLEK PRODUCTS COMPANY, INC.

**165 BROADWAY • NEW YORK 6, N. Y.**

*SPECIALISTS IN ORGANIC CHEMICALS*

# ALCO PRODUCTS

## VULCANOLS
Compounded latices for the textile trade

## TRENAMINE
The finest synthetic detergent available

## SOLADINE
A stable, rapid wetting agent

## ALCO-W.B.
A penetrant with good wetting back properties

## ALCOFLEX
## ALCOFLEX CONC.
Urea-Formaldehyde resins in paste or powder form

## RESINS & LATICES
Modified for sizing compounds

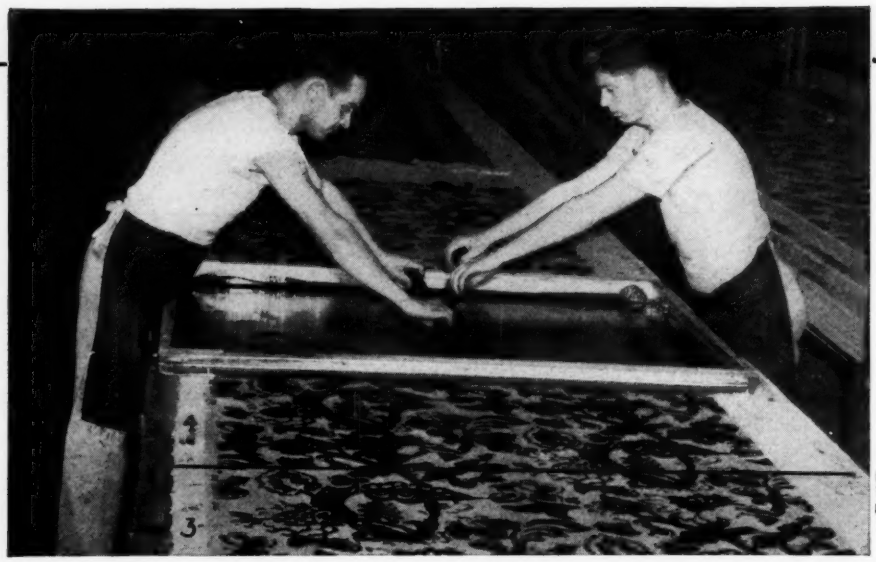
## AQUATITE
A wax emulsion type of water repellent

## SULPHONATED OILS
All animal and vegetable oils

ALCO OIL & CHEMICAL CORP.
TWENTY-FIRST AND WILLIAM STS.
PHILADELPHIA 34, PA.

# New! Resyn*

## TABLE ADHESIVE FOR SCREEN PRINTING



BARRET TEXTILE photo

*Holds tightly! Releases cleanly!*

**NATIONAL'S** quickly applied and reusable **TABLE ADHESIVE** holds unprinted cloth tightly to the screen table during the printing process. It replaces the tedious, time-consuming process of pinning.

**NATIONAL'S TABLE ADHESIVE** is a cold, liquid **RESYN*** adhesive that comes to you ready for use. It provides a light tack that prevents cloth slippage during printing . . . permits easy cloth removal after printing . . . and leaves the cloth clean and undamaged. In addition, it maintains a usable working tack for a period of several weeks. Ask for a trial demonstration in your plant.

National also produces: **AMBERTEX** a heavy-bodied thickener for white discharge, direct and vat color printing; **FLOTEX** to replace natural gums for printing; **FIBERTEX** for textile finishing; **NALEX** for cotton and worsted warp sizing; **FLOJEL** uniform, thin boiling corn starches in all standard fluidities; **HOOSIER** Pearl Cornstarch.

*Offices:* 270 Madison Avenue, New York 16; Boston, Philadelphia, Atlanta, New Orleans, Indianapolis, Chicago, San Francisco and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto and Montreal. In Holland: Nationale Zetmeelindustrie, N. V., Veendam.

(*Reg. Trade Mark)

National ADHESIVES

EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE

PLATYCERCUS ♂ EXIMUS (*Eastern Rosella*)

SPIZELLA MONTICOLA (*Tree Sparrow*)

*One the object of ornithological expeditions,*
*the other unwanted and unsung!*
*Always... everywhere... inspiring color*
*is sought after... mousy drabness rejected.*

# WHEREVER *Color* IS USED·

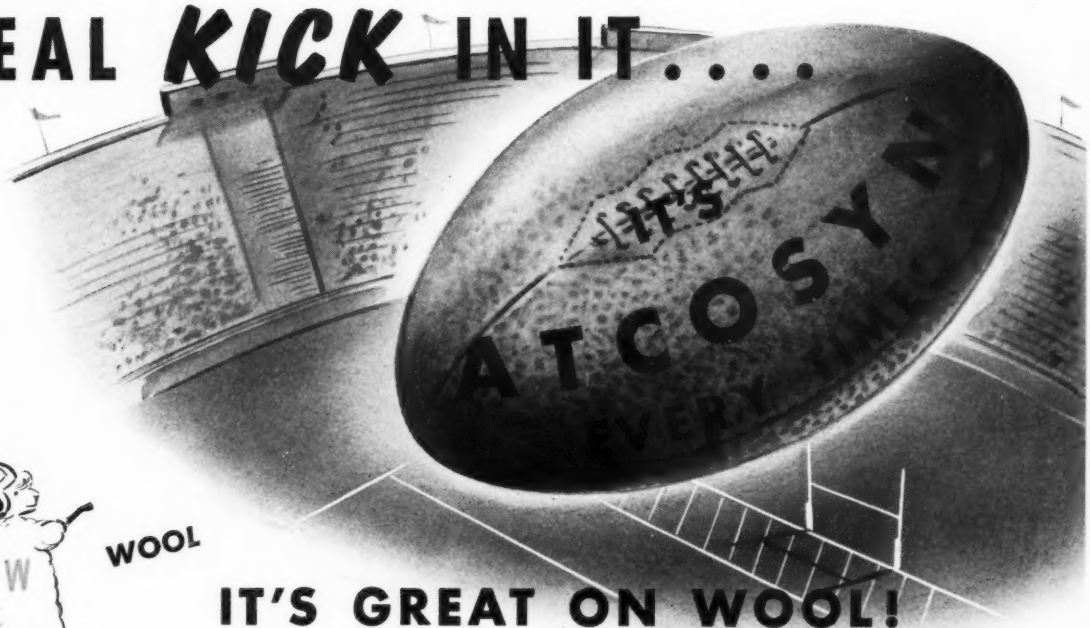
## SPECIFY *National Aniline Dyes*

**NATIONAL ANILINE DIVISION • ALLIED CHEMICAL & DYE CORPORATION**

**40 RECTOR STREET, NEW YORK 6, N.Y.** BOSTON • PROVIDENCE • PHILADELPHIA • CHICAGO • SAN FRANCISCO • PORTLAND, ORE. GREENSBORO • CHARLOTTE • ATLANTA • NEW ORLEANS • CHATTANOOGA • TORONTO

*For Detergent Action with a*

# REAL *KICK* IN IT....



WOOL

**IT'S GREAT ON WOOL!**

RAYON

**IT'S GREAT ON RAYON!**

**IT'S GREAT ON SYNTHETICS!**

SYNTHETICS

**IN SHORT IT'S GREAT!**

Use ATCO Products

## Atlantic Chemical Co., Inc.

MAIN PLANT: CENTREDALE, RHODE ISLAND
BRANCH OFFICE: PATERSON, NEW JERSEY

*Try Atcosyn on Your Next Detergent Job!*

# *A world-wide*

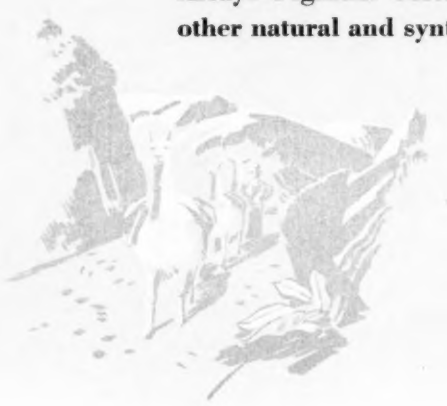
# Aridye

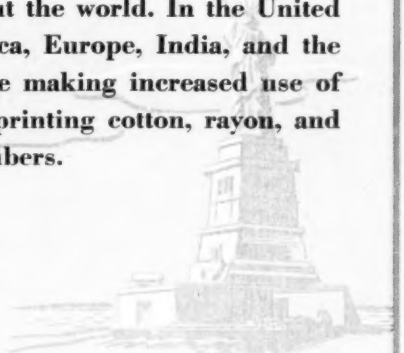
## *Pigment colors*

Research Laboratories of Interchemical Corporation where Aridye Pigment Colors were born.

**In the fall of 1937 a group of workers in the Research Laboratories of Interchemical Corporation, searching for better methods for coloring textiles, succeeded in developing entirely new types of coloring materials. These were pigmented water-in-oil emulsions. Christened Aridye* Pigment Colors, these new products proved to have many advantages over conventional dyes for textile printing.**

**Today, on their 10th anniversary, Aridye Pigment Colors are known throughout the world. In the United States, Canada, Latin America, Europe, India, and the Far East, textile printers are making increased use of Aridye Pigment Colors for printing cotton, rayon, and other natural and synthetic fibers.**





*reputation*

# IN 10 SHORT YEARS!

**The original formulations of pigmented water-in-oil emulsions have been vastly improved. Other types of Aridye Pigment Colors have been introduced for application by the oil-in-water emulsion system, the solvent dispersion system, and the aqueous dispersion system. Processes for dyeing with various types of Aridye Pigment Colors have been developed. Through constant research, Interchemical will continue its leadership in the development of better products and processes for better pigment printing and dyeing.**

**A fully equipped organization stands ready to aid you in the solution of any printing or dyeing problem involving the application of pigment colors. And you are cordially invited to call on us at any time for technical service or information. Write to Interchemical Corporation—Textile Colors Division—Pioneers in Pigment Colors for Textiles—Box 357, Fair Lawn, N. J.**

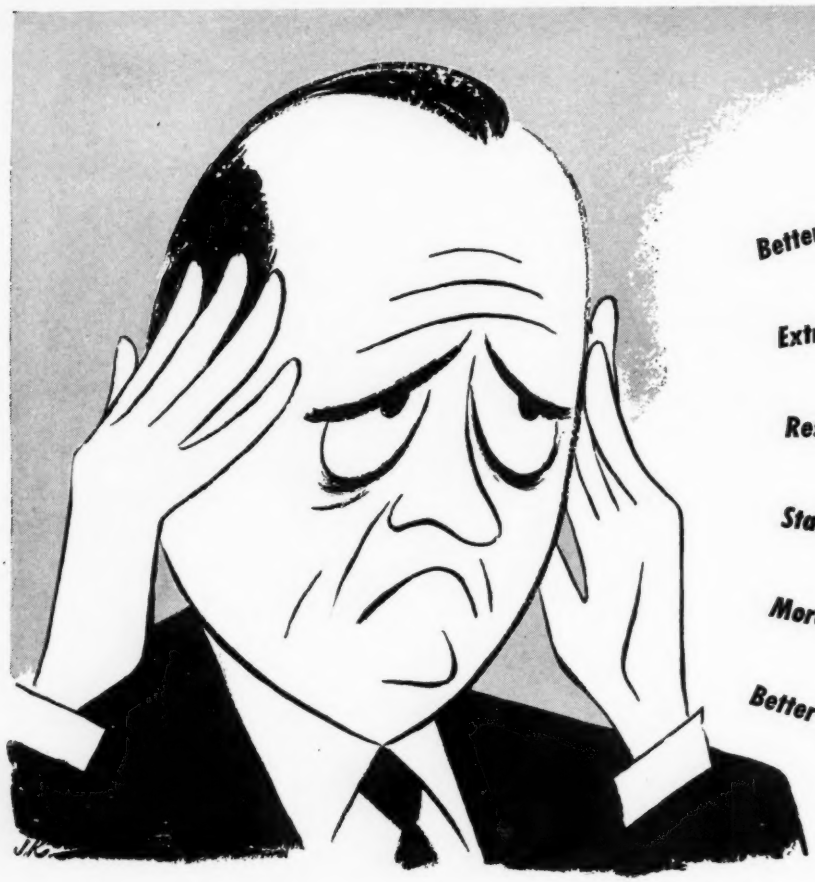
**CHECK LIST OF IMPORTANT ADVANTAGES OF ARIDYE* PIGMENT COLORS FOR TEXTILE PRINTING**

- Sharpness of Mark
- Close Registration
- Fastness to Sunlight
- Fastness to Washing
- Bright Colors
- Uniformity of Shade
- Ease and Economy of Application
- No Impairment of Hand

## INTERCHEMICAL CORPORATION

**TEXTILE COLORS DIVISION, FAIRLAWN, N. J. • ROCK HILL, S. C. • PROVIDENCE, R. I.**

*Reg. Trade Mark U. S. Patent Office



*Better wetting action?*

*Extra strength detergency?*

*Resistance to hard water?*

*Stability to acid or alkali?*

*More level dyeing?*

*Better dispersion and rewetting?*

**ALKANOL* B**
**ALKANOL* RW**
**ALKANOL* WXN**
**DUPONOL* D**
**DUPONOL* G**
**DUPONOL* LS**
**DUPONOL* WA**
**DUPONOL* 80**
**HYDRAPHTHAL***
**MP 189**
**MERPENTINE***
**MERPOL* B**
**MERPOL* C**

*TRADE MARK

# What's your headache?

Losing sleep—or money—over any of these problems? Let Du Pont help you. Our technical staff will gladly lend a hand—help you select the proper Surface Active Agent or work out a special combination to fit your specific need.

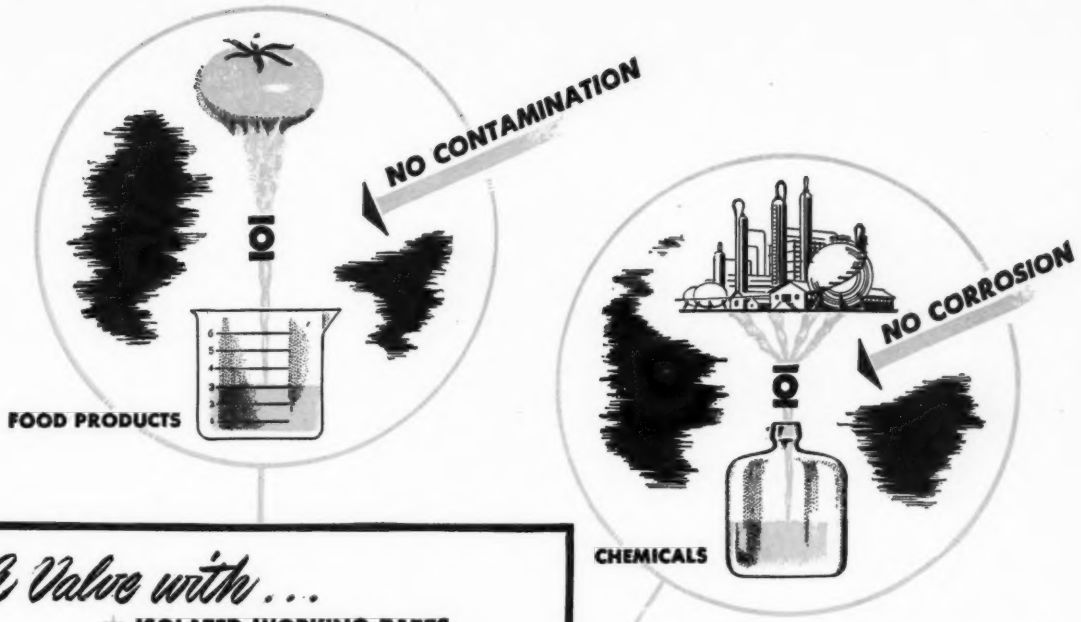
The supply of these products is gradually catching up with demand. It might be good business for you to let Du Pont Surface Active Agents help carry your textile responsibilities. Du Pont know-how and years of textile research are at your service. Organic Chemical Department, Fine Chemicals Division, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

# DU PONT SURFACE ACTIVE AGENTS

BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

DU PONT

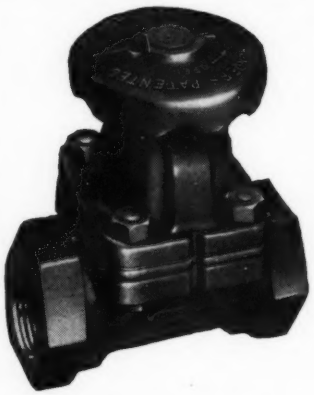
REG. U. S. PAT. OFF.




*A Valve with . . .*

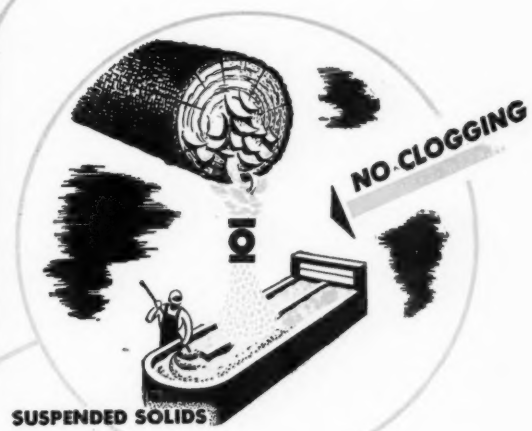
- ★ ISOLATED WORKING PARTS
- ★ CORROSION-PROOF LININGS
- ★ STREAMLINED FLOW

## GRINNELL-SAUNDERS DIAPHRAGM VALVES



● The flexible diaphragm isolates the working parts of the valve from the fluid, preventing contamination, and permits streamlined flow plus positive closure even with suspended solids.

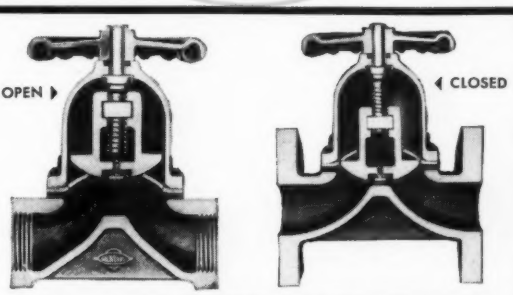
A selection of diaphragm materials and also body linings of glass, porcelain, lead, rubber or synthetics protects against corrosion.




- No packing glands to demand constant attention. Non-rising stem eliminates breakage . . . sealed for protection from dust, weather and corrosion.
- Working parts completely isolated from the fluid. No sticking, corroding or clogging to interfere with easy operation and tight closure. No contamination from valve lubricants.
- Compressor and finger plate combine to support the diaphragm in all positions.
- The large area of contact of the diaphragm on the seat, plus the resilience of the diaphragm, permits positive closure even when foreign matter is trapped.
- No metal-to-metal seats to become damaged or wire-drawn.
- No refacing or reseating is required.
- Streamlined passage without pockets reduces friction to a minimum and prevents accumulation of sludge and foreign solids.
- The valve body—the only metal that could contact the fluid—can be completely lined with glass, porcelain, lead, rubber or synthetic compounds (flange type only) to suit service requirements.

*Write for catalog describing Grinnell-Saunders Diaphragm Valves—standard and special types.*

**GRINNELL COMPANY, INC.**
Providence 1, R. I., U.S.A.
Branch Offices in Principal Cities




GRINNELL
FOUNDED 1850
WHENEVER PIPING IS INVOLVED

**Yes, no matter what fiber or combination of fibers you are using, you will find there's a Laurel Product that will give you exactly the finish you desire.**

**For over thirty-seven years Laurel has been meeting successfully myriad challenges of leading dyers, bleachers and finishers. From this reservoir of experience and service has come the long line of Laurel processing agents to give you better, more efficient processing for every dollar you spend.**

**Plan now to get the extra benefits Laurel Soaps, Oils and Finishes impart to your fibers or fabrics. Ask Laurel Technicians for their recommendations on your next processing job.**

**Laurel Boil-Off Oils and Compounds** for more effective degumming of pure silk, rayon and cotton mixtures.

**Laurel Emulsions and Softeners** for better quality, better knitability, proper conditioning, proper regain.

**Laurel Hosiery Finishes** for softer, smoother appearance, greater freedom from snags, more wear.

**Laurel Nylon Finishes** for speedier processing, improved hosiery quality.

**Laurel Olamine,** cation active softener for exceptionally soft finish on dyed rayons.

**Laurel Rayon Oils** for faster, softer yarns, improved appearance and hand of your rayon.

**Laurel Ruxite Coning Oils** for superior lubrication, greater pliability, fewer breaks, higher winding efficiency.

**Laurel Rayon Size** for smoother, stronger, cleaner, more resilient rayon warps.

**Laurel Textile Oil,** a favorite of hundreds of customers because of its unusual versatility for improved quality and finish of fiber and fabric.

**Laurel Wool Oils** for maximum lubrication.

**Laurel Wool Scouring Compounds** for speedier detergent action, clearer, more even dyeings, cleaner, softer, loftier wool.

**Laurel Special Finishes, Water Repellents, Mildewproofing and Flameproofing Compounds.**

soaps, oils, finishes

# LAUREL SOAP MANUFACTURING CO., Inc.

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Chattanooga, Tenn.
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*Wm. H. Berolet's Sons*
ESTABLISHED 1909

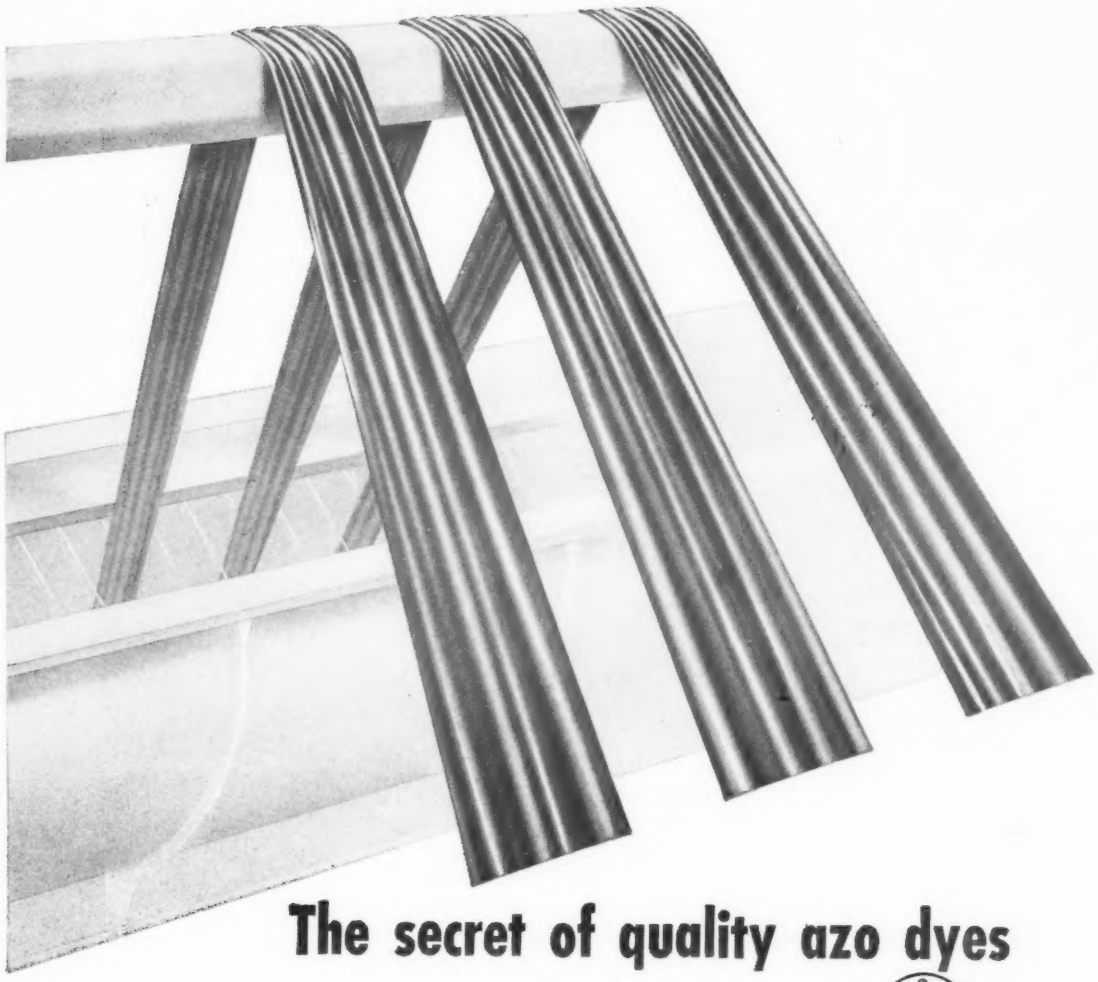
**OFFICES:**

2601 East Tioga Street
Philadelphia 34, Pa.

# DEVELOP YOUR COLORS

## with U. S. P.

## SOLVAY Sodium Nitrite



## The secret of quality azo dyes

Leading dye makers and textile dyers *consistently* specify SOLVAY Sodium Nitrite to develop their azo dyes . . . *Experience* has proven to them that when they specify "Solvay," they get *quality* colors. If *you* want quality, specify SOLVAY.

**SOLVAY SALES CORPORATION**

*Alkalies and Chemical Products Manufactured by The Solvay Process Company*

**40 Rector Street** **New York 6, N. Y.**

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# BECCO

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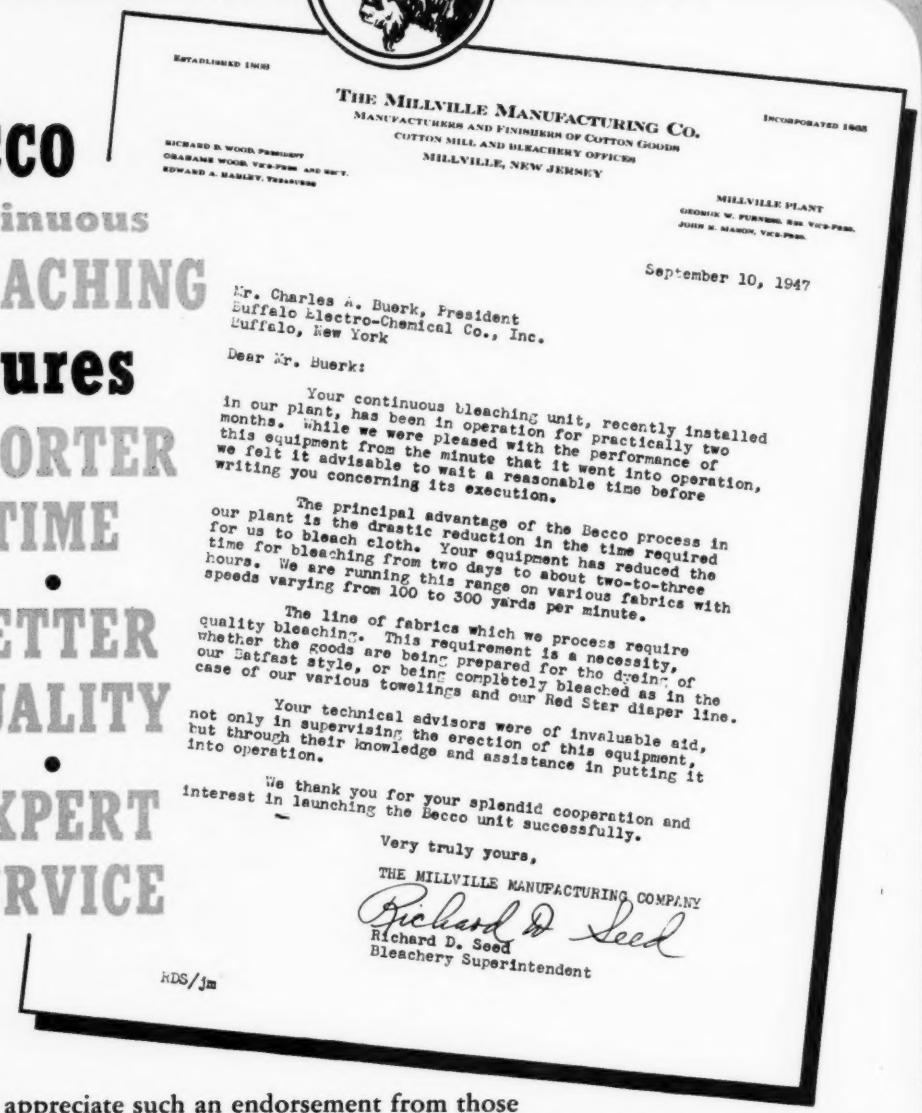

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COTTON MILL AND BLEACHERY OFFICES

MILLVILLE, NEW JERSEY

INCORPORATED 1865

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EDWARD A. HARLEY, TREASURER

MILLVILLE PLANT
GEORGE W. FURNESS, 2ND VICE-PRES.
JOHN H. MASON, VICE-PRES.

September 10, 1947

Mr. Charles A. Buerk, President
Buffalo Electro-Chemical Co., Inc.
Buffalo, New York

Dear Mr. Buerk:

Your continuous bleaching unit, recently installed in our plant, has been in operation for practically two months. While we were pleased with the performance of this equipment from the minute that it went into operation, we felt it advisable to wait a reasonable time before writing you concerning its execution.

The principal advantage of the Becco process in our plant is the drastic reduction in the time required for us to bleach cloth. Your equipment has reduced the time for bleaching from two days to about two-to-three hours. We are running this range on various fabrics with speeds varying from 100 to 300 yards per minute.

The line of fabrics which we process require quality bleaching. This requirement is a necessity, whether the goods are being prepared for the dyeing of our Batfast style, or being completely bleached as in the case of our various towelings and our Red Star diaper line.

Your technical advisors were of invaluable aid, not only in supervising the erection of this equipment, but through their knowledge and assistance in putting it into operation.

We thank you for your splendid cooperation and interest in launching the Becco unit successfully.

Very truly yours,

THE MILLVILLE MANUFACTURING COMPANY

Richard D. Seed

Richard D. Seed
Bleachery Superintendent

RDS/jm

● We appreciate such an endorsement from those who insist upon fine bleaching. Profit from the experience of other manufacturers in obtaining economical operation and quality products.

● Let Becco technical advisors consult with you on methods and installations to give you best results.

## BECCO SALES CORPORATION

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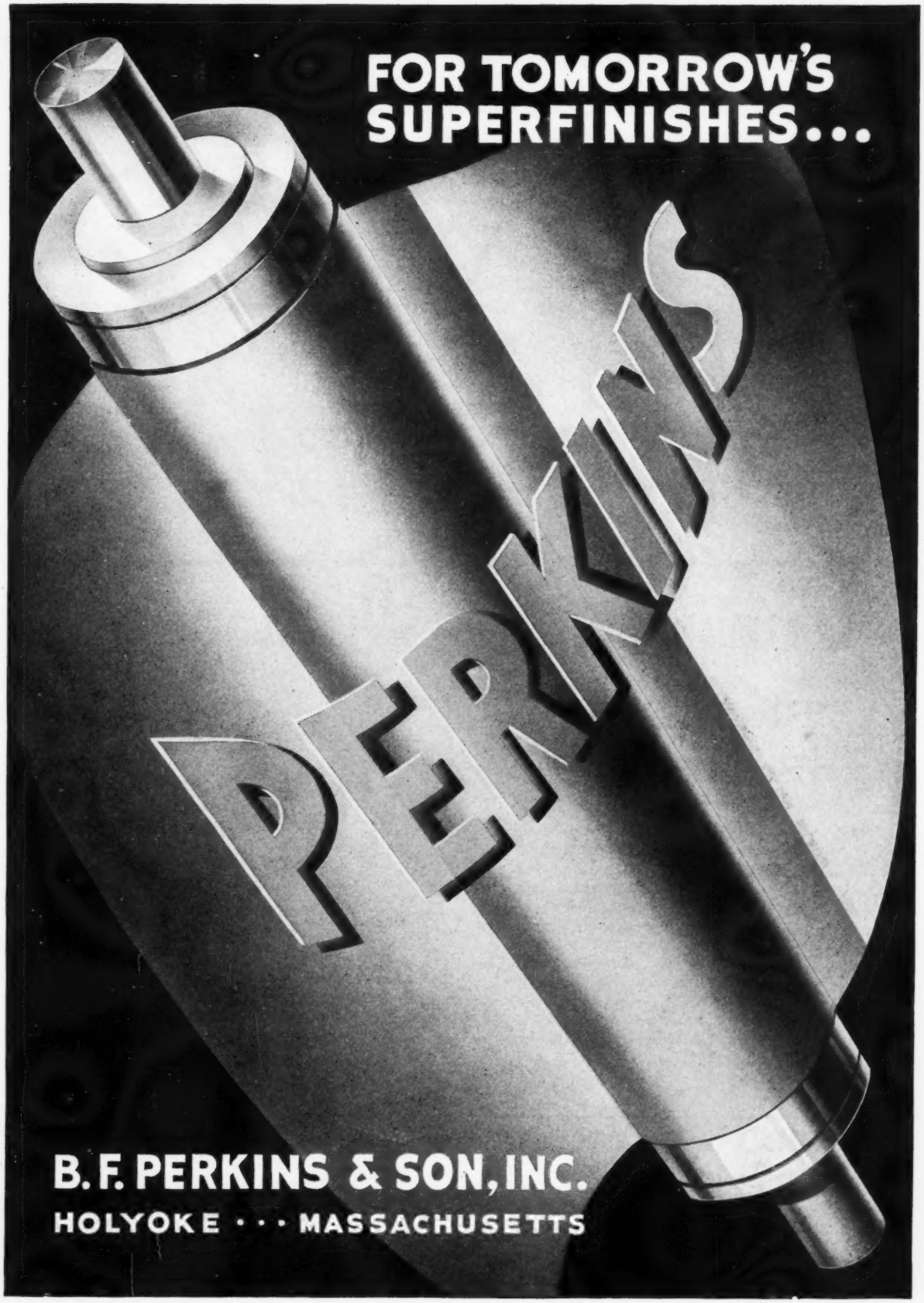
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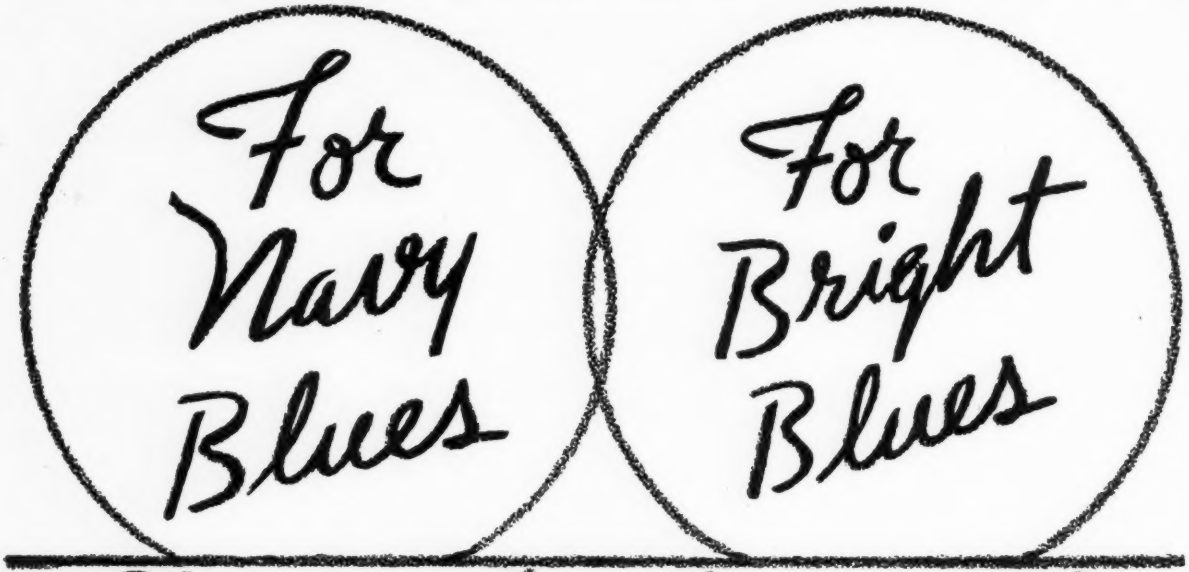


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### Blue GNXX
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THESE azoic colors, for printing cotton, linen or rayon, produce Navy Blue of good fastness at a low cost. In combination with the Pharmasol Yellows they produce deep Browns.

PHARMASOLS are stabilized solutions, adjusted to the most practical concentration, which can be easily applied with a maximum of efficiency.

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# AATCC Convention Number

AMERICAN

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**October 20, 1947**

**VOLUME 36 NUMBER 21**

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*Proceedings of the*

# American Association of Textile Chemists and Colorists

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OCTOBER 20, 1947

# *Greetings from Your President*

HENRY F. HERRMANN
*National President*

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

HENRY F. HERRMANN, President
GENERAL DYESTUFF CORPORATION
435 HUDSON ST., NEW YORK 14, N. Y.

JOHN N. DALTON, Vice President

C. NORRIS RABOLD, Vice President

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CHAIRMAN OF RESEARCH COMMITTEE

H. W. STIEGLER
DIRECTOR OF RESEARCH

HAROLD C. CHAPIN
SECRETARY

LOWELL TEXTILE INSTITUTE
LOWELL, MASS.

Dear Fellow-Members:-

We have gathered in Chicago from all parts of the country in response to the cordial invitation of our friends of the Mid-West Section to conduct the affairs of our annual meeting and to strengthen the bonds that link us into a National Association.

Wherever the textile industry is represented you find members of the A.A.T.C.C. In the eastern states the industrial concentration is very great and in consequence the size and activity of the sections located in this fertile territory are easily attained. However, as we move west of the Alleghenies the textile industry becomes sparser and distances disproportionately greater. Much credit is due to the Mid-West Section for its steady growth under these difficult circumstances.

It was a comparatively simple task to conduct a successful Annual Meeting in Chicago, when last we met here in 1933, with the Century of Progress World's Fair as a powerful center of attraction. This year we had only loyalty to our Association and faith in its purposes to induce us to make the trip, which for most of us is long and costly, to attend the 26th Annual Meeting.

We are here to review the pledge which was made in Boston at the 25th Jubilee Convention to continue the fine work begun by our charter members and to carry the Association during the second 25-year period of its history to still higher peaks of accomplishment and aspiration. Let us see whether our program aimed at "Blazing Trails toward better Fabrics" will point the way to the achievement of this end.

Cordially yours,

H. F. Herrmann

President

HFH/LB

**NATIONAL CONVENTION**

**Congress Hotel**
**Chicago**

**October 23, 24, 25, 1947**

**Auspices of**
**MID-WEST SECTION**

# Greetings from the Mid-West Section

*THE Mid-West Section of the AATCC, as sponsors of this National Convention, extends a cordial welcome to members, guests, and friends who are in attendance.*

*We feel highly honored and privileged to sponsor this gathering, and assure you that we have done everything in our power to make this meeting of interest to everyone. It is our sincere hope and expectation that you will take back with you something of value.*

*The Mid-West Section welcomes the opportunity of meeting members from other sections and would like to demonstrate the high standards of their hospitality.*

*A. J. FEIT,*
*Chairman, Midwest Section*

WM. R. MOORHOUSE
*National Treasurer*

HAROLD C. CHAPIN
*National Secretary*

LOUIS A. OLNEY
*President Emeritus*

JOHN N. DALTON
*National Vice-President*

C. NORRIS RABOLD
*National Vice-President*

H. W. STIEGLER
*National Director of Research*

# Program

## National Convention, Chicago, October 23, 24, 25, 1947

## *Theme: "Blazing Trails to Better Textiles"*

### Thursday, October 23, 1947:

9:00 A.M. to 7:00 P.M. *Registration*—English Walnut Room.

10:00 A.M. to 12 Noon. *Exhibits are open*—Florentine Room.

10:30 A.M. to 12 Noon. *National Council Meeting*—Parliament Room.

1:00 P.M. to 5:30 P.M. *Sub-Committee Meetings*—Pine Room.

2:00 P.M. to 5:00 P.M. *Personnel Service*—French Room.

7:30 P.M. *Dinner Honoring Corporate and Charter Members*—Casino Room.

Address—"Gearing Toward Better Textiles"—J. Robert Bonnar, General Dyestuff Corp., Chairman AATCC Executive Committee on Research.

Address—"An Industrialist's Patent Policies"—Harry A. Toulmin, Jr., Patent Attorney.

### Friday, October 24, 1947:

9:00 A.M. to 6. P.M.—*Registration*—Francis I Room.

9:00 A.M. to 12 Noon. *Personal Service*—French Room.

2:00 P. M. to 5:00 P.M.—*Personnel Service*—French Room.

9:30 A.M. to 12 Noon. *General Technical Session*—Gold Room.
Dr. Miles A. Dahlen, Presiding.
"Silicones and their Application to the Textile Industry"—F. L. Dennett, Dow-Corning Corp.
"The Textile Drying Process"—Albert C. Walker, Bell Telephone Laboratories.
"Plastic Materials that Supplement or Supplant Textiles"—C. W. Patton, Bakelite Corp.

10:00 A. M. to 8:00 P. M. *Exhibits are open*—Florentine Room.

12 Noon to 12:15 P. M. *Annual Business Meeting*—Gold Room.

12:30 P.M. to 2:00 P.M. *Luncheon, National and Sectional Officers*—English Walnut Room.

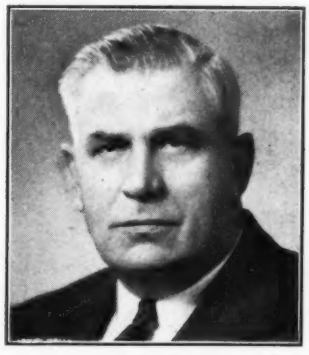
2:00 P.M. to 5:00 P.M. *Cellulosic Fibers Group Meeting*—Pine Room.
Chairman, George E. Osha, Munsingwear, Inc.
"Pigmented Resin Emulsions for Printing and Pad Dyeing"—Max Silverman, Sherwin-Williams Co.
"Practical Experience in Vat Acid Dyeing"—J. H. Hennessey, General Dyestuff Corp.
"Unwoven Fabrics: Their Future in the Textile Industry"—O. G. Edwards, Industrial Research Institute, University of Chattanooga.
"Textile Finishing Machinery"—Edw. S. Pierce, H. W. Butterworth and Sons Co.

2:00 P. M. to 5:00 P. M. *Non-Cellulosic Fibers Group Meeting*—Parliament Room.
Chairman, Robert C. Anderson, Cleveland Worsted Mills.
"The Manufacture and Processing of Quality Blended Fabrics"—Emory A. Richards, Lippitt Worsted Mills, Inc.
"Some Aspects of the Chlorination of Wool to Produce Shrink Resistance"—Milton Harris, Harris Research Laboratories.
"Chemical and Physiological Aspects of Moth Protection"—H. Luttringhaus, General Dyestuff Corp.
I. "Scouring Wool Raw Stock with a Synthetic Organic Detergent."
II. "Wool Piece Goods Scouring with a Synthetic Organic Detergent"—Dr. O. M. Morgan, National Aniline Division, Allied Chemical & Dye Corp.

2:00 P.M. to 5:00 P.M. *Finishing and Auxiliaries Group Meeting*—Parlors A-B-C.
Chairman, Clarence W. Wille, Burson Knitting Co.
"Trends in the Evolution of Fire-Resistant Textiles"—Dr. Robert W. Little, Ellicott Laboratories, Inc.
"Synthetic Detergents in Textile Processing"—H. C. Borghetty, General Dyestuff Corp.
"Permanent Finishes on Rayon"—Leonard Shapiro, Alrose Chemical Company.
"Anionic Substantive Softeners"—Earle D. McLeod, Arnold Hoffman & Co., Inc.

AL J. FEIT
*Chairman, Mid West Section*

KENNETH H. BARNARD
*National Convention Chairman*



ELMER F. SMITH
*General Convention Chairman*

2:00 P.M. to 5:00 P.M. *Fundamental Research Group Meeting*—Parlor D.
Chairman, Dr. Leonard Armstrong, Armour & Co.
"Studies on Nylon Dyeing; Effect of Dyeing Procedures"—Louis I. Fidell, Dr. G. L. Royer and H. E. Millson, Calco Chemical Division, American Cyanamid Co. (To be presented by Mr. Fidell).

"The Effect of Fiber Physical Differences upon the Dyeing of Nylon Staple"—Dr. R. J. Thomas and B. F. Faris, E. I. duPont de Nemours & Co., Inc. (To be presented by Dr. Thomas).

"Some Aspects of the Aging of Coated Fabrics"—E. V. Painter, Fabric Research Laboratories, Inc.

2:00 P.M. to 5:00 P.M.—*Hosiery Group Meeting*—Parlor K.
Chairman, Edward J. Siegrist, Holeproof Hosiery Co.
"Current Developments in Hosiery Dyeing and Finishing"—Edward J. Siegrist.
"Nylon Staple in The Hosiery Industry"—Dr. W. B. Vincent, E. I. duPont de Nemours & Co., Inc.
"A Simple Tester for Evaluating the Snag Resistance of Nylon Hosiery"—Dr. J. E. Smith and T. D. Johnson, Jr., E. I. duPont de Nemours & Co., Inc.
(To be presented by Mr. Smith).

2:00 P.M. to 5:00 P.M.—*Testing Group Meeting*—Parlor M.
Chairman, Miss Laura E. Pratt, Sears, Roebuck & Co.

"Measurement of Stiffness and Resiliency as Related to Textile Finishing"—Dr. Lyman Fourt, Harris Research Laboratories.

"Problems Encountered in a Department Store Laboratory"—Arthur S. Eichlin, Marshall Field & Co.

"Determination of the Solubility of Dyes"—C. L. Zimmerman and Dr. H. R. McCleary, Calco Chemical Division, American Cyanamid Co.

"Estimation of Vat Printing Paste on Cloth and an Electrometric Analysis of the Critical Chemical"—Dr. Henry E. M. Specht, Cranston Print Works Company.

8:00 P.M. to 9:15 P.M.—*General Research Meeting*—Gold Room.
J. Robert Bonnar, Chairman of Executive Committee on Research, Presiding.
Open to all.

**Saturday, October 25, 1947:**

9:00 A.M. to 12 Noon. *Personnel Service*—French Room.

9:00 A.M. to 7:30 P.M. *Registration*—Francis I Room.

9:30 A. M. to 12:30 P.M. *Intersectional Contest*—Gold Room.
Patrick J. Kennedy, National Chairman, Presiding.

10:00 A.M. to 2:00 P.M. *Exhibits are open*—Florentine Room.

12:30 P.M. *Alumni Luncheon*—English Walnut Room.

7:30 P.M. *Banquet*—Gold Room.
Olney Medal Award.
Results of Intersectional Contest.
President's Address.
Address—"Science in Japan"—Dr. Roger Adams, Head, Chemistry Dept., University of Illinois.

# *Committees*

## for the Chicago Convention

## *Congress Hotel, October 23, 24, 25, 1947*

Kenneth H. Barnard, *National Chairman.*

Elmer F. Smith, *General Chairman.*

*Dining*

Arthur T. Brainerd, *Chairman.*
Harold R. Calvert.
Louis Hoehn, Jr.
H. Thompson Latham.

*Entertainment*

Norman G. Koehler, *Chairman.*
Kenneth A. Coate.
Al. P. Roy.

*Exhibits*

Samuel Klein, *Chairman.*
Joseph R. Bentert.
Arthur J. Hultberg.
Paul F. Willgeroth.

*Finance*

Joseph H. Jones, *Chairman.*
Frank J. Acker.
Alfred J. Olson.
J. Gordon Stott.

*Hotel and Transportation*

Eric W. Camp, *Chairman.*
Robert O. Brenner.
Erwin J. Sindt.
Herbert W. Tetzlaff.

FRANK F. MEYERS
*Ladies*

JAMES S. MORRISON
*Registration and Reception*

GEORGE B. CHABOT, JR.
*Printing*

NORMAN G. KOEHLER
*Entertainment*

*Ladies*

Frank F. Meyers, *Chairman.*
Mrs. Victor C. Braun.
Miss Helen Braun.
Mrs. Louis Hoehn, Jr.
Mrs. Gerry R. Kremers.
Mrs. Frank F. Meyers.
Mrs. Herbert W. Tetzlaff.

*Printing*

George B. Chabot, Jr., *Chairman.*
Walter H. Jaeger.
Albert P. Wandtke.

*Publicity*

Winn W. Chase, *National Chairman.*
Elliott Morrill, *Local Chairman.*
Arthur A. Barker.
Edward C. Eaton.
Clarence W. Jameson.

*Technical Program*

Miles A. Dahlen, *National Chairman.*
Herman Boxser, *Local Chairman.*
Leonard Armstrong.
Jerome Kritchevsky.
Leslie O. Meyer.
Paul Soderdahl.

ELLIOTT MORRILL
*Local Chairman, Publicity*

WINN W. CHASE
*National Chairman, Publicity*

JOSEPH H. JONES
*Finance*

*Registration and Reception*

James S. Morrison, *Chairman.*
Archie G. Alexander.
Frank F. Beverly.
Andrew F. Blackburn.
Louis W. Blank.
Victor C. Braun.
R. P. Cole.
Raymond M. Haas.
Gerhard R. Kremers.
Gilbert T. Latham.
Leslie B. MacFarland.
Charles E. Maher.
James G. Morgan.
Merrill G. Morris.
Elmer Scharf.
Patrick J. Kennedy, New York Section.
Arthur R. Thompson, Jr., Piedmont Section.
Harold L. DeTurck, Philadelphia Section.
Edward S. Chapin, Northern New England Section.
Howard M. Waddle, Southeastern Section.
Emory A. Richards, Rhode Island Section.
R. Wilburn Freeze, South Central Section.

ARTHUR T. BRAINERD
*Dining*

ERIC W. CAMP
*Hotel and Transportation*

SAMUEL KLEIN
*Exhibits*

# Intersectional Contest

## Chicago National Convention, October 25, 1947

### Papers - Committees - Speakers - Judges

### New York Section

*Title of Paper*

"Dyeing and Fastness Characteristics of Aqueous Chlorinated Wool".

*Chairman of Contest Committee*

Daniel P. Knowland, Geigy Company, Inc.

*Contest Committee*

Dr. Alfred L. Peiker, Calco Chemical Division, American Cyanamid Company.

Dr. Arthur E. Weber, National Aniline Division, Allied Chemical & Dye Corp.

Dr. Emery I. Valko, Drew Chemical Company.

Dr. Hugo Ehrhardt, Botany Mills, Inc.

Charles H. A. Schmitt, Sandoz Chemical Works, Inc.

James E. Flint, General Dyestuff Corp.

Edward D. Lind, Ciba Company, Inc.

William F. Brommelsiek, Forstmann Woolen Co.

*Speaker*

Dr. Alfred L. Peiker.

*Judge*

Emmett J. Driscoll, Turner-Halsey Co.

### Rhode Island Section

*Title of Paper*

"The Influence of Electrical Charge in the Application of Dyestuffs".

*Chairman of Contest Committee*

Herman C. Allen, Sayles Finishing Plants, Inc.

DANIEL P. KNOWLAND
*Chairman, N. Y. Contest Committee*

PATRICK J. KENNEDY
*National Chairman*

*Contest Committee*

Harold B. Sturtevant, Hart Products Corp.

Prof. William W. Russell, Brown University.

Dr. W. George Parks, Rhode Island State College.

Raymond W. Jacoby, Ciba Company, Inc.

Herbert F. Kilguss, Apponaug Co.

William F. Huber, Rhode Island School of Design.

William M. Thornton, Wanskuck Co.

Gerald B. Stackpole, Cranston Print Works.

George H. Wood, Jr., Ex-officio, Apponaug Co.

**National Committee**
**Intersectional Contest**

Patrick J. Kennedy, *Chairman*

Winn W. Chase — J. Robert Bonnar

Frank J. O'Neil — C. Norris Rabold

Arthur T. Brainerd

*Speaker*

Raymond W. Jacoby.

*Judge*

Elliot Broadbent, Glenlyon Print Works.

### Piedmont Section

*Title of Paper*

"A Study of Soils and Detergency".

*Chairman of Contest Committee*

Dr. R. E. Rupp, Pacific Mills.

*Contest Committee*

V. B. Holland, Cannon Mills Co.

Charles B. Ordway, Burlington Mills.

*Speaker*

V. B. Holland

*Judge*

J. B. Neely, Burlington Mills.

R. Hobart Souther, Proximity Print Works (Alternate)

### Southeastern Section

*Title of Paper*

"Weather-Protective Treatments for Cotton Duck".

*Chairman of Contest Committee*

J. D. Dean, Southern Regional Research Laboratory, U. S. Dept. of Agriculture.

*Contest Committee*

Winston B. Strickland, Southern Regional Research Laboratory.

HERMAN C. ALLEN
*Chairman, R. I. Contest Committee*

DR. LEONARD J. ARMSTRONG
*Chairman, M. W. Contest Committee*

P. J. Fynn, Southern Regional Research Laboratory.

Jack E. Sands, Southern Regional Research Laboratory.

Robert O. Simmons, Pepperell Mfg. Co.

Dr. Howard M. Waddle, West Point Mfg. Co.

Miss Mary Anna Grimes, Texas Agricultural Experiment Station.

*Speaker*

P. J. Fynn.

*Judge*

Curt Mueller, Bibb Mfg. Co.

## Mid-West Section

*Title of Paper*

"Application of Carboxy Methyl Cellulose to Wet Processing of Textiles".

*Chairman of Contest Committee*

Dr. Leonard J. Armstrong, Armour & Co.

*Contest Committee*

Leslie O. Meyer, Phoenix Dye Works.

Paul Soderdahl, Hart & Harrington, Inc.

Dr. Ben C. Sher.

DR. R. E. RUPP
*Chairman, Piedmont Contest Committee*

Al. J. Feit, E. I. duPont de Nemours & Co., Inc.

Jerome Kritchevsky, Minol Laboratories.

Earl W. Scott, Western Felt Works.

*Speaker*

Dr. Ben C. Sher.

*Judge*

Joseph H. Jones, Phoenix Dye Works.

## South Central Section

*Title of Paper*

"The Effect of Urea on Cellulose Textiles."

*Chairman of Contest Committee*

Dr. Raymond B. Seymour, University of Chatttanooga.

*Contest Committee*

J. Albert Crumley, Bryan Full Fashion Hosiery Mill.

Andrew J. Kelly, Burkhart-Schier Chemical Co.

William Agnew, Dixie Mercerizing Co.

*Speaker*

Dr. Raymond B. Seymour.

KENNETH R. FOX
*Chairman, N.N.E. Contest Committee*

*Judge*

Alexander D. Campbell, Althouse Chemical Co.

## Philadelphia Section

*Title of Paper*

"The Application of Chemical Controls to Acid Dyeing."

*Chairman of Contest Committee*

Richard B. Stehle, Allegheny Dye Works.

*Contest Committee*

Curt R. Baeringer, Eagle Dyeing and Finishing Co.

Elmer C. Bertolet, Laurel Soap Mfg. Co.

Felice J. De Maria, J. B. Stetson Co.

Harold L. De Turck, Berkshire Knitting Mills.

Dr. Edwin C. Dreby, Scholler Bros., Inc.

Wm. Ebersold, James Lees & Sons Co.

Arthur W. Etchells, Hellwig Dyeing Corp.

Walter F. Fancourt, III, W. F. Fancourt & Co.

Joseph E. Goodavage, Sharples Chemical Co.

DR. RAYMOND B. SEYMOUR
*Chairman, S.C. Contest Committee*

RICHARD B. STEHLE
*Chairman, Phila. Contest Committee*

JAMES D. DEAN
*Chairman, S.E. Contest Committee*

Edwin J. Grajeck, Collins & Aikman Corp.

Dr. O. B. Hager, Alco Oil & Chemical Co.

Herbert C. Haller, Forstmann Woolen Co.

M. H. Klein, Sandoz Chemical Works, Inc.

Constantin J. Monego, Philadelphia Textile Institute.

Harry L. Morgan, James Lees & Sons Co.

Thomas J. Scanlon, Calco Chemical Division, American Cyanamid Co.

Dr. Robert J. Thomas, E. I. duPont de Nemours & Co., Inc.

Dr. Harold H. Tucker, Consultant.

Jackson A. Woodruff, American Viscose Corp.

*Speaker*

Richard B. Stehle.

*Judge*

Prof. Percival Theel, Philadelphia Textile Institute.

### Northern New England Section

*Title of Paper*

"An Electrolytic Method for Stripping Colored Wool."

*Chairman of Contest Committee*

Kenneth R. Fox, President, Lowell Textile Institute.

*Contest Committee*

Edwin W. Adams, Pepperell Mfg. Co.

Tracy A. Adams, Barnes Textile Associates, Inc.

Lyman Billings, Socony Vacuum Oil Co., Inc.

Henry D. Evans, Pepperell Mfg. Co.

Ernest R. Kaswell, Fabric Research Labs., Inc.

Arthur C. Merrill, Jr., Lawrence Print Works, Inc.

Clarence L. Nutting, Arlington Mills.

Tom Peel, Pacific Mills.

Dr. Donald H. Powers, Monsanto Chemical Co.

Ridgley G. Shepherd, Assoc. Factory Mutual Insurance Co.

Thomas W. Shoesmith, Goodall-Sanford, Inc.

Prof. John H. Skinkle, Lowell Textile Institute.

*Speaker*

Ernest R. Kaswell.

*Judge*

Dr. David X. Klein, Aspinook Corp.

## Special Events for the Ladies Attending the Chicago Convention

Thursday, October 23

*2:00 P.M. to 5:00 P.M.*

Choice of conducted Sight Seeing or Shopping Tour.

Friday, October 24

*8.00 A.M. to 9:00 A.M.*

Tickets for Breakfast Club Radio Program will be available. Those wishing to attend must report to the Ladies Headquarters by 7:00 A.M.

*11:00 A.M. to 2:00 P.M.*

Tour of Marshall Field Department Store followed by a luncheon and Style Show in the Narcissus Executive Room.

Saturday, October 25

*11:00 A.M. to 5:00 P.M.*

Several points of interest are recommended, including the Chicago Art Institute, Adler Planetarium, Field Museum and Museum of Science and Industry.

Ladies Headquarters

Ladies registration headquarters and reception parlor are maintained on the mezzanine floor adjacent to the general registration room. All ladies who register are invited to attend the dinners and technical sessions.

## Exhibitors at the Chicago Convention

### *Florentine Room, Third Floor, Congress Hotel*

American Aniline Products, Inc.
Atlas Electric Devices Co.
Calco Chemical Division, American Cyanamid Company
Daily News Record
E. I. duPont de Nemours & Co., Inc.
Ellicott Laboratories
The Foxboro Company
Howes Publishing Company, Inc.
Monsanto Chemical Company
National Aniline Division, Allied Chemical & Dye Corp.
Nopco Chemical Company
The Shelton Looms, Sidney Blumenthal & Co., Inc.
Textile World
Warwick Chemical Company Division, Sun Chemical Corp.
AATCC Research Committee

## *Purpose of the Chicago Convention*

*The Boston Convention commemorated the 25th Anniversary of the founding of our Association, rounding out an important era in the development of products and processes used in the textile industry. That quarter century also roughly coincided with that period in world affairs between the ends of the two World Wars.*

*With the exigencies of war now laid aside—we all hope, permanently—our industry faces a brilliant future of great development. What the next 25 years can bring in new textile fibers, dyeing and finishing improvements, would take a bold prophesy.*

*Through the collective research which this Association affords, as well as through our individual efforts, we will have incentives to point out the directions our progress should take.*

*Therefore, the Mid-West Section hopes your attendance will profit you in suggesting ways for the improvements constantly being made and that you may again enjoy the benefits of good fellowship.*

## Your Host for the 1947 National Convention

# *The Mid-West Section*

ARTHUR T. BRAINERD

THIS is the second occasion upon which the Mid-West Section acts as your host for a National Convention of the AATCC. The first occasion was in 1933. When only two years of age, the Section began making plans for an Annual Meeting to be held during the opening year of the Century of Progress Exposition. Having decided we were not long enough established to request funds for a convention, we promptly started to collect and save money for the purpose. The budget was carefully prepared and the committee worked faithfully, achieving a most successful meeting with a good technical program, good entertainment and excellent food. It is a pleasure for our Section to again act as host to the National Association on this occasion.

For your interest and information a brief history of our Section follows:

* * * *

DURING the nineteen twenties there existed in Chicago an organization known as the Spectrum Club. As the name indicates, its members were a group whose paramount interest was Color. Its constitution and by-laws were embodied in its motto—James Branch Cabell's, "Respect your Neighbors' Notions." Its function was purely social.

When the suggestion was made that the Spectrum Club was a perfect nucleus for a Section of the AATCC, the members unanimously agreed. Each promised to do a share in arousing interest and promoting attendance at an organization meeting called for March 16, 1929, at the Hotel Bismarck, in Chicago. Dr. E. H. Killheffer was invited to attend, to address the meeting and to preside until officers were elected.

Most of the sixty-five or seventy present at this first meeting signed application blanks for membership after listening to the golden voice of Dr. Killheffer. This group was thoroughly representative of the chemists and colorists of the Middle West as well as its Textile and Dyestuff industries. A great majority of those in attendance at our first meeting are still among our most active members.

The following AATCC members signed the original petition for a Mid-West Section:

F. H. Proudfoot
H. F. McKenna
L. R. Fox
J. M. Remington
Guy Powell
H. H. Britt
M. G. Morris
J. F. Feit
C. E. Bick
E. F. Hempel
F. L. Wilhelm
Edward Weber
S. V. Cottrell
F. J. Acker
P. O. May
J. G. Stott
A. J. Feit
C. B. Fieldhouse
C. E. Maher
H. W. Waffenschmidt
W. E. Brainerd
H. T. Latham
Louis Hoehn, Jr.
H. N. Bragg
M. H. Klein
E. F. Smith
G. E. Burke
S. T. Worcester
J. W. Eich
M. A. R. Selisch
E. F. Thompson
N. A. Fisher
C. W. Wille
Carl Braun
Nestor Grotelueschen
N. A. Ruston
Meyer Fleischmann
Elliott Morrill
A. T. Brainerd
R. J. Todd
James Hyde
J. W. Kopf

### First Officers

Following Dr. Killheffer's address explaining the aims and objectives of the Association, its formation and growth, the first officers were elected, as follows:

Chairman—Carl E. Bick
Vice-Chairman—Arthur T. Brainerd
Secretary—Clarence W. Wille
Treasurer—John W. Kopf

After the election of officers, Chairman Bick called on Charter Members of the Association and others for ideas for increasing membership and for suggestions concerning speakers and subjects. It seemed

*(Concluded on Page P599)*

**Original Members of the Spectrum Club.**

# The Textile Industry in the Middle-West

ARTHUR T. BRAINERD

*Ciba Company, Inc.*

THE Middle West, since the days when pioneers discovered the fertile plains of the prairie states, has been the granary of the nation. Industry, however, always follows quickly wherever agriculture is successful. It is not surprising, therefore, to learn that many of the oldest textile manufacturing plants in the United States are located in the corn country of Indiana and Illinois.

Until big steel and big motor manufacturing came to Chicago and Detroit, industry in this section was scattered and moderate in size, but during the present century the Textile Industry has kept pace. It has grown rapidly in all phases, particularly in modernization of plant, efficient management and scientific control. There is hardly a textile processing plant in the Central States that has not added new and modern equipment as a continuous policy for the past twenty years.

## Contributions of AATCC

Along with modernizing of plant has come better control of operations, the development of which is due largely to the principles on which the American Association of Textile Chemists & Colorists was founded. The standardizing of testing methods, the information available in the Year Book and the exchange of ideas and experience among members have been valuable factors in aiding our mills and finishing plants to keep themselves abreast of new developments in the industry. The Open Forums of our afternoon meetings, known as "Information Please", are really an outgrowth of the bull sessions, enjoyed through the years, in discussion of new methods and common problems.

Every branch of textile manufacturing is represented in the Mid-West. As in other districts of the United States, we have some small manufacturers and some very large ones. Textile mills are found in all parts of the nine states which our Section includes. Their equipment and production are varied and the total is impressive.

## Woolen and Worsted Mills

A brief summary indicates a total of 82 woolen and worsted mills having 676 sets of cards and 2,824 looms producing woolen and worsted yarns, hats, blankets, mackinaw and snow suitings, overcoating and topcoating, men's, ladies' and boys' wear, paper makers felts, upholstery, uniform cloth, shirtings, flannels, automobile robes, billiard cloth, Jacquard and broadloom rugs and all grades of felt, as well as large quantities of reclaimed wool.

Many of the oldest woolen mills were established near the middle of the nineteenth century, two having been incorporated in 1866. The newest was incorporated and equipped in 1946.

Probably the blanket mills of the Middle West are among the best known from an industry-wide viewpoint. Many famous names are found among them. The increased use of color during recent years has given the blanket manufacturer an opportunity to add style and character to his product and our mills have been among the leaders. Western and Mid-Western mackinaw and snow suit cloth is produced in large volume and in excellent quality. The manufacture and distribution of garments made from such material is a large and important industry and of direct interest to all who serve the woolen mills.

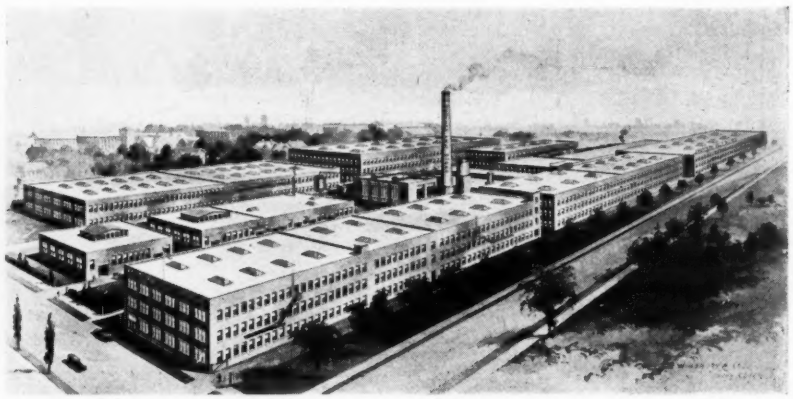
The automobile industry is a large consumer of woven and felt wool products. Middle Western mills, equipped with modern and efficient dyeing and finishing machinery and favored by proximity to their market, are leaders in the field of face-finished upholstery. Huge quantities of wool, hair and jute felt are shipped daily to the automobile makers by their neighbors, who are logical suppliers.

Included among the manufacturers of men's, ladies' and boys' suitings and topcoatings are several long established and successful institutions. Many Mid-Western manufacturers are famous for manipulated fabrics as well as for fine all wool cassimeres and coverts.

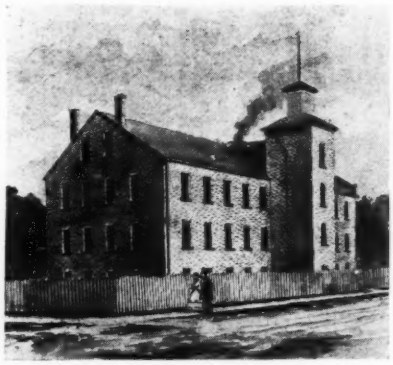
## Cotton Mills

There are very few cotton mills in the territory which manufacture yarns and process them in finished products. A total of about 87,500 spindles and 636 looms are listed, most of which produce hosiery yarns, bag cloth, sheeting, drapery and bedspread fabrics. There are, however, a considerable number of items made from cotton and rayon that make an important textile industry, particularly in

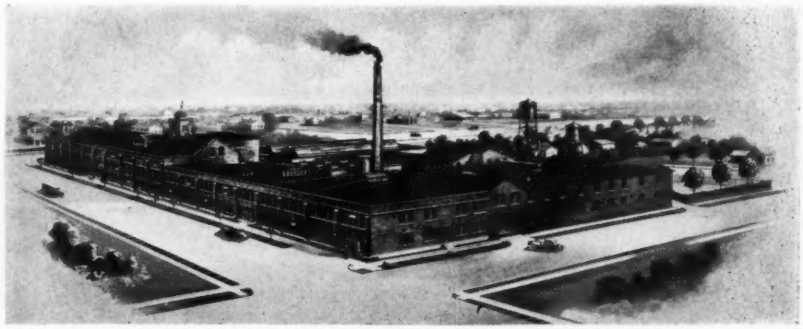
ABOVE — Original plant of Western Felt Works in 1899 at 787-797 South Canal Street, Chicago. All of the employees are shown.



RIGHT — Present plant of Western Felt Works at 4029-4135 Ogden Ave., Chicago.



*Original plant of the Seymour Woolen Mills, Seymour, Indiana, incorporated in 1866.*



*Present plant of the Seymour Woolen Mills.*

the larger cities. A list of these would include tape, webbing, batting, felt and padding, gauze and bandages, absorbent cotton, insulated wire, rugs, mops, twine, thread, tufting, wicking, nets, flock, shoe laces, cordage, braid, lace curtains, neckwear, couch covers, carpet warp, denim, turkish towels and terry cloth.

## Knitting Industry

The knitting industry is the largest branch of Textiles in the Middle-West, This is due to the important production of full fashioned hosiery, as well as to the great number of knitting machines producing sweaters, bathing suits, robes, caps, scarfs, mittens, underwear, men's hosiery, novelties and fabrics for various purposes. A total of 122 mills, operating 18,768 knitting machines, manufacture great quantities of this class of merchandise.

Because of the fact that considerable amounts of capital are necessary for equipment, the development of the full fashioned hosiery business has been in sizeable plants. At present, there are eighteen mills having the equivalent of about 1,350 large size full fashioned machines producing ladies' hosiery. The Middle Western mills are among the largest of the national advertisers and produce a fair share of all silk and nylon hosiery. It is notable that one large mill is now entirely equipped with single unit machines.

Production figures for 1946, compiled by the National Association of Hosiery Manufacturers, show that the West and Middle West accounted for 3,695,000 dozen pairs of ladies' full fashioned and 6,816,000 dozen pairs of seamless hosiery. The latter figure includes men's full fashioned, as well as men's and women's seamless, infants' and children's ribbed stockings and a large volume of anklets. These figures indicate a loss in Mid-Western production since the years of 1939 and 1941, but a gain over 1945. Any comment on full fashioned hosiery production is hardly complete without reference to the fact that this industry was completely shut off from its raw material supply (silk and nylon) at the start of World War II, and was faced with most difficult and unusual problems in seeking to keep organizations intact and in some measure to satisfy customers and the public. Surely the Textile Chemist was of inestimable assistance in overcoming many of the difficulties of dyeing and finishing viscose and acetate rayon, from which presentable and saleable fine hosiery was made. High labor costs have been the chief factor in cutting production of infants' and children's stockings since 1941 and a great shortage of female help still exists.

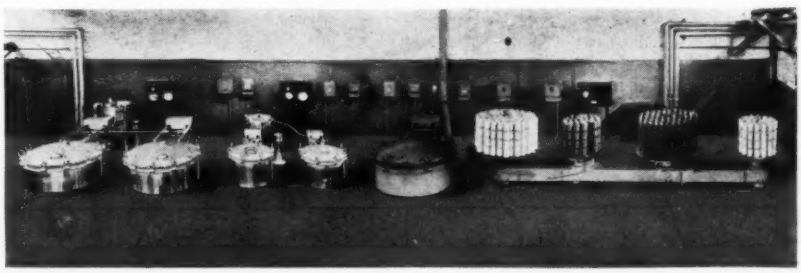
## Dyeing and Finishing Plants

There are twenty-six dyeing and finishing plants "serviced" by the Mid-West Section. These include dyers of all types of yarn who have the most modern equipment available, as well as dyers, bleachers and finishers of all grades of piece goods. In yarns, worsted and cotton are of most importance because of the large number of knitters in the territory. About 200 dyeing machines are available for yarn dyeing, producing 12 to 15,000,000 lbs. of dyed yarn per year. Piece goods finishing includes bleaching for surgical goods, production of coated fabrics and shade cloth, dyeing and waterproofing of duck and canvas goods, dyeing of automotive fabrics, as well as dyeing and finishing for garment, furniture, awning and other trades. Equipment for this work includes continuous dyeing machines, continuing bleaching systems, and also large numbers of pads and jigs, and the usual apparatus for drying and finishing.

## Allied Industries

Allied with the Textile Industry are the producers of equipment and processing materials which it needs. A considerable number of metal working plants make hosiery forms, tanks, valves, piping and specialties, while others assemble control instruments and laboratory supplies of every description. Tremendous quantities of heavy chemicals and soap, together with intermediates, dyestuffs, oils and finishes produced in the Mid-West place the textile manfacturer in close contact with his sources of information and supply.

This is a world of fierce competition but we of the Middle West, following the spirit of the pioneer, endeavor to temper striving with cooperation. We think that the pioneer who came West and who started industry here would not be disappointed with the results obtained by those who followed and continue to build on his foundation.



*Installation of Gaston County Machines at Schlake Dye Works, Inc., Chicago.*

# The Convention City

## Chicago: City of Unforgettable Memories

*"It's vast, it's exciting, it's different—*
*it would take a lifetime to see it all"*

The Michigan Avenue link bridge, flanked on the far side by two of Chicago's most famous buildings, Tribune Tower on the right and the Wrigley Building on the left.

EVERYONE coming to Chicago has a good time.

Some come to shop and to see the sights, others to enjoy the shows, indoor and outdoor sporting events, celebrated restaurants, museums and art galleries, or the comforts of a luxurious hotel. Many come for a change in their daily routines, and no one is disappointed.

Every year more than 20 million people visit Chicago. They find something interesting to see and to do . . . all of the time.

If this is your first visit to Chicago, the very thought of seeing the big city sends your pulse beat upward. You are pleased and excited and why not? Chicago is a delightfully exciting place.

Excitement rides the skyways over the Chicago Municipal Airport, where giant airliners arrive or depart, one every three minutes.

Excitement hovers about the trains which rush in and out of the city, 1500 every day.

Excitement permeates the loop, rising and falling to the beat of millions of feet as Chicagoans hurry about whatever they may be doing at the moment.

You know in advance that Chicago is the world's fourth largest city and that it covers a lot of ground. Even so, it is much larger than you thought.

If you arrive by air, you find the city stupendously vast, radiating fan-wise from a blue inland ocean into the midst of far horizons with never a break in the "built up" pattern.

If you come by train or automobile, the feeling of vastness is even more intense. Chicago, you discover, is something more than a city with corporate boundaries. It is an empire, a super city, which would be more precisely described as Greater Chicago or "Chicagoland." It reaches into the adjacent states of Indiana and Wisconsin, encompassing 15 counties and 285 villages, towns, and smaller cities. These communities depend largely on Chicago for their economic existence. They are spun into the main body of the metropolis by a webbing of railroads, bus lines, electrical inter-urban transportation systems, and auto highways.

It is Chicago which gave to the world its first steel frame skyscraper, its first

(↑) Chicago's big memorial stadium, Soldiers Field, accommodates more than 100,000 persons for athletic contests and various spectacles.

The high speed outer drive skirts the lake front. This view shows (→) a portion of Lincoln Park, with downtown Chicago in the distance.

Looking north along Michigan Boulevard, Chicago's best known street, lined with hotels and fine shops.

Two majestic lions guard the entrance to the Art Institute, housing one of the world's finest collections of paintings and sculpture.

department store, its first grain reaper, its first atomic chain reaction.

Abraham Lincoln was nominated for the Presidency here, as were also Grant, Garfield, Cleveland, Harrison, Theodore Roosevelt, Taft, Harding, and Franklin Roosevelt.

The city is the world's leading railroad center, meat packing center, printing center, and grain trading center. It produces approximately 47% of the nation's candy; 43% of its radio and radar equipment; 17% of its steel and packing house products; 11% of its printing.

Almost one million persons are employed in Chicago area industries; all persons gainfully employed total approximately two and four-tenths million.

The Indians used the word Chicago to define something "great" or "strong". Perhaps there was something prophetic in their application of the name to this particular region.

Best estimates of the city's present population place the total at 3,675,000. The population of the metropolitan area is estimated at five and a half million.

It is in the Chicago loop where you first learn the real meaning of "crowds." Within this compact area, roughly five blocks by seven, bounded by the elevated structure, more than five million people "jam pack" daily. State and Madison Streets, in the heart of the loop, is said to be the busiest intersection in the world.

Chicago's outstanding list of spectator sports constitute one of the city's major attractions.

If you are a sports fan you can root (in season) for the Cubs and the Sox of professional baseball, the Bears or the Cardinals or the Rockets of professional football, or the Blackhawks of professional hockey. There is a prize fight, a wrestling match, or a midget auto race almost every week of the year.

Horce racing, on five beautiful tracks, is continuous from April to November.

People who have seen them say there is nothing to compare with the Professional-All-Star Football Game, the Golden Gloves Tournament, the start of the Mackinac Yacht Race, the International

*(Continued on Page P599)*

A sky-line view of downtown Chicago with Grant Park and the Lake Front yacht harbor in the foreground.

Grant Park, Chicago's landscaped "front yard," with Buckingham Fountain at the left. Three of Grand Park's four museums can be seen in the upper right hand corner. At the left is the Adler Planetarium; center, the Shedd Aquarium; right, a portion of the Museum of Natural History.

# Abstracts of Papers to be Presented at Technical Program

## *Chicago National Convention, Congress Hotel, Chicago, Oct. 24, 1947*

### General Technical Session

Gold Room
9:30 A. M. to 12:00 Noon
*Chairman:* DR. MILES A. DAHLEN
*E. I. duPont de Nemours & Co., Inc., Wilmington, Del.*

* * * * *

### "Silicones and their Application to the Textile Industry"

By F. L. DENNETT
*Dow-Corning Corporation, Midland, Michigan*

ORGANOSILICON oxide polymers, more generally known as silicones, have been developed in a variety of physical forms ranging from fluids to resins. Because of their inertness, heat stability, inherent water repellency, ability to lubricate thermo-plastic materials, and their desirable electrical properties, these materials have found ready application in many industries.

Of particular interest to the textile industry are silicone insulated motors for high temperature and high humidity applications. Silicones in grease form, developed just for use in the bearings of silicone insulated motors, are also indicated for use wherever temperature resistant greases are needed. Silicone fluid already has proven its value as a lubricant and water-repellent treatment for glass fibers. This should be of interest as a component in coning oils and other textile finishes. Other fluids, in emulsified form, have given considerable promise as a new permanent water-repellent treatment, applicable to all fabrics.

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### "The Textile Drying Process"

By DR. ALBERT C. WALKER
*Bell Telephone Laboratories, Inc., Murray Hill Laboratory, Murray Hill, N. J.*

MOST of the research work of outstanding value on the subject of moisture relations in textiles has been done within the last twenty years, and an effective generalized correlation of such

DR. MILES A. DAHLEN
*National Chairman, Technical Program*

information on a variety of fibers was presented within the past year. This recent correlation shows that it is possible to obtain reliable data on the moisture content-relative humidity relations of a textile over a range of temperatures, from only a few careful measurements.

While textile manufacturers are becoming more aware of the need to improve their drying processes, most of their concern has been, quite naturally, with the economic question of increasing the rate of drying, and much less with the basic moisture relations which are important in determining the limiting conditions which should be maintained in a drier so as to prevent damage to the textile, or to aid in improving quality and durability of the finished material. Therefore, it seems desirable to outline the modern views of the structure of textile fibers and the manner in which moisture is believed to be held within the fiber structure so that this knowledge may be put to better use in improving the common denominator of most textile processing, that of drying.

The paper closes with an illustration of a successful practical application of vacuum drying of textiles, under conditions where high temperature would cause serious damage. The success of this application rested largely on the understanding of how moisture is held in a textile and led to the design of an apparatus for removing this water in a safe and unsatisfactory manner.

HERMAN BOXSER
*Local Chairman, Technical Program*

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### "Plastic Materials that Supplement or Supplant Textiles"

By C. W. PATTON
*Manager, Coatings and Adhesive Materials Division, Bakelite Corp., New York City*

PLASTIC products of a textile nature, such as woven monofils, films, coated paper, and bonded unwoven textiles, which are used and/or processed in a manner comparable to conventional textiles will be described.

These materials may involve or be related to present-day textile processing, will undoubtedly enter into certain fields now held almost exclusively by conventional fabrics, and there certainly will be a mutual interaction between the materials which will influence the future course of both. A number of these factors will be presented in an endeavor to guide those interested in fabrics and those interested in plastic materials of a textile nature.

* * * * *

### Cellulosic Fibers Group Meeting

Pine Room
2:00 P.M. to 5:00 P.M.
*Chairman:* GEORGE E. OSHA
*Munsingwear, Inc., Minneapolis, Minn.*

* * * * *

## "Pigmented Resin Emulsions for Printing and Pad Dyeing"

By MAX SILVERMAN

*Sherwin-Williams Company, Gibbsboro, N. J.*

LACQUER-IN-WATER and water-in-lacquer emulsions for textile printing and dyeing will be discussed, and the advantages and disadvantages of each type will be covered.

The types of dyestuffs which lend themselves for use as pigments will be discussed, including the characteristics necessary to insure good wetting, washability and good over all fastness properties.

The results of a study of the all around properties of pigment-resin colors versus vats in both the printing and pad dyeing field of use may also be included.

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## "Practical Experience in Vat Acid Dyeing"

By J. H. HENNESSEY

*General Dyestuff Corp., New York City*

THIS method of applying vat dyestuffs to yarns in package machines and to cotton piece goods by the pad-jig method as well as by the continuous method continues to be a topic of considerable interest in the trade.

Advantages of improved penetration in heavier constructions of cotton piece goods and uniformity in package dyeing of yarns represents the chief advantage of vat-acid procedure. Additional operations are required in the preparation of the vat acid compared to the methods now in general use, and as a consequence no claim can be made that its application will find extensive use. The yield obtained, varying with the different vat dyestuffs, is also a factor to which consideration must be given. The method has, however, found acceptance by yarn and by piece dyers for special purposes.

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## "Unwoven Fabrics: Their Future in the Textile Industry"

By O. G. EDWARDS

*Industrial Research Institute, University of Chattanooga, Chattanooga, Tenn.*

FOR years the cotton industry has watched its markets being captured by competitive materials whose main advantage over woven cotton textiles was low cost. Today, some of these markets are being regained as a result of research which has taken place in the laboratories of the larger mills and in non-profit industrial research institutes.

Non-woven textiles are not substitutes for ordinary cloth or for paper but are finding uses where the former was too expensive and where the latter had proved itself inadequate such as for disposal face tissues, towels, napkins, table cloths, polishing cloths and diapers. Of course, there are many functional uses already found and many others to be developed in which non-woven textiles are far superior to previously known materials.

For example, plastic laminates using non-woven textiles for the reinforcing member are definitely not just a substitute for laminates made from more expensive woven fabrics. These new plastic laminates have high strength, low water absorption, good electrical properties and outstanding machinability.

Non-woven textiles are manufactured by combining fibers and plastics and because of the wide variety of each of these components, the types of products produced are almost unlimited. Those now in commercial production are sold under the trade names, Maselinn, Plastavon, Steralon, Viskon and Webril.

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## "Textile Finishing Machinery"

By EDWARD S. PIERCE

*H. W. Butterworth & Sons Company, Philadelphia, Pa.*

NEW designs, new developments and plans for future textile finishing machinery will be discussed. Details on machine standardization, improved laboratory technique, vat steam dyeing, continuous bleaching and high speed tentering will be included.

* * * * *

## Non-Cellulosic Fibers Group Meeting

Parliament Room
2:00 P.M. to 5:00 P.M.
*Chairman:* ROBERT C. ANDERSON
*Cleveland Worsted Mills, Cleveland, Ohio*

* * * * *

## "The Manufacture and Processing of Blended Fabrics"

By EMORY A. RICHARDS

*Lippitt Worsted Mills, Inc., Woonsocket, R. I.*

THE term "blended fabrics" as used in this paper refers particularly to fabrics consisting of wool in admixture with either rayon, cotton, acetate or nylon. In the majority of cases, the wool is blended with any one of the above fibers but in other cases a combination of the above fibers with wool is used to produce novelty effects. There has always been a definite need for fabrics of this nature preferably those of the highest quality inasmuch as fabrics made up of part wool composition are generally sold in direct competition with all worsted fabrics. In view of this fact the accent should be on the quality at all times. Blended fabrics have been manufactured for a long time enjoying a certain modicum of success. The buying public became better acquainted with blended fabrics during the last war and had the opportunity to evaluate all characteristics of these fabrics.

In order to produce quality blended fabrics, control is essential at all times. Some sacrifice must be made both in production and cost, in order to produce fabrics of the highest quality so that some of the stigma now attached to blended fabrics may be dispelled. The controls should be applied at the very beginning of the process, that is, in purchasing raw materials that are both consistent in composition and meeting the strictest physical and chemical requirements. In the initial stages of operation such as opening, blending, carding and spinning every step should be checked and double checked. This should eliminate a great many of the physical imperfections now allowed to slide by.

The scouring, dyeing and finishing operations are also potential sources of trouble and the dyer and finisher are confronted with a greater variety of problems than when handling fabrics consisting of any one fiber; therefore chemicals of the highest purity, dyestuffs with the best fastness properties, and finishing agents with the greatest permanency should be used. All this tends to increase cost but in the long run they will more than compensate for themselves in increased revenue for the finished product plus the prestige established by the company manufacturing this type of material.

Again we wish to stress that the by-word at all times should be "quality."

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## "Some Aspects of the Chlorination of Wool to Produce Shrink-Resistance"

By DR. MILTON HARRIS

*Harris Research Laboratories, Washington, D. C.*

THAT wool can be made resistant to shrinkage during laundering by treatment with active chlorine has been known for many years, yet prior to the war not a single process even achieved a modest foothold in this country. During the war, the problem became an acute one, since wool items such as socks were used by the Army in quantities never before reached and excessive shrinkage of

such materials put a great strain on an already over-burdened industry. The answer was found in the chlorination process and at the war's end, about 8,000,000 pairs of army socks per month were being so processed and the average wear-life of the socks were more than doubled.

The success achieved with socks suggested that wider application of this reaction could be made on other wool items which had not been successfully processed and accordingly a broad fundamental study of the reaction of wool with active chlorine was undertaken under the sponsorship of the Office of the Quartermaster General. It was found that the pH of the treating solution is of prime importance in determining the type and extent of physical and chemical modification of the fiber. The chlorine acts to equalize the frictional differences obtained when a fiber is rubbed towards the tip and towards the root and this inhibits the tendency of the fibers to migrate and become entangled. By limiting the action of the chlorine to the surface of the fiber, desirable modification of the frictional properties can be obtained without undesirable modification of other important properties of wool.

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## "Scouring Wool Raw Stock with a Synthetic Organic Detergent"

By DR. O. M. MORGAN

*National Aniline Division, Allied Chemical and Dye Corporation, New York City*

THE physical and chemical properties of Nacconol NR, a synthetic organic detergent, lend themselves conveniently and economically to the scouring of all types of wool and mohair rawstock. Improved analytical methods for the determination of this synthetic detergent have been very helpful in establishing proper scouring controls and have allowed for extreme simplification of the wool raw stock scouring process. In most instances the foam produced by the synthetic detergent on the surface of the scouring solution provides a sufficiently accurate control for the synthetic detergent concentration. Alkali concentrations may be controlled by periodic pH measurements. The use of a constant feed of slightly causticized soda ash stock solution is recommended for the control of bicarbonate alkalinity.

The scouring of pulled wools, which contain appreciable quantities of lime, is greatly simplified by the use of this lime stable synthetic detergent and scouring costs are markedly reduced.

## "Wool Piece Goods Scouring with a Synthetic Organic Detergent"

By Dr. O. M. MORGAN

EMULSIFIED mineral oil lubricants are coming into wider use by the textile industry. Certain types of emulsified oils may be scoured out of the fabrics with considerable ease while others present real scouring problems. Tests conducted in laboratory scouring equipment as well as in dolly washers and continuous scouring machines have indicated that Nacconol NR, a synthetic organic detergent, is a very efficient scouring agent for the removal of emulsified mineral oil lubricants from wool piece goods. This synthetic detergent may be used by itself to remove the mineral oil compositions or may be built with suitable salts such as sodium chloride or sodium bicarbonate. Best scouring results are obtained under neutral or slightly alkaline conditions. High alkalinity should be avoided. The type of salt used as a builder for this synthetic detergent has an important bearing on the scouring efficiency.

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## "Chemical and Physiological Aspects of Moth Protection"

By DR. H. LUTTRINGHAUS

*General Dyestuff Corp., New York City*

I—Chemical Part: It will be explained that mothproofing agents of different chemical constitution produce different reactions on the moth larvae. It will be shown why they have protecting properties and that some have a specific action for the digestive ferment in the moth larvae. The destruction of the -S-S- bridge and its relation to moth protection will be discussed.

*II—Physiological Part:* About 40 colored slides which explain the life and the habits of the moth and especially the mechanics and physiology of its digestive process will be shown.

It will be explained that the reason for a preferred attack on finer quality woolens is based on the anatomy of the larva. A group of colored pictures taken of the intestinal tract of the larva show how the wool is dissolved, how the dyestuff is reduced and reoxidized during this process, while other fibers like rayon, although they are eaten are not digested.

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## Finishing and Auxiliaries Group Meeting

Parlors A-B-C
2:00 P.M. to 5:00 P.M.

*Chairman:* CLARENCE W. WILLE, *Burson Knitting Company, Rockford, Illinois*

## "Trends in the Evolution of Fire-Resistant Textiles"

By DR. ROBERT W. LITTLE

*Ellicott Laboratories, Inc., Lawrenceville, N. J.*

A SIMPLE classification of textiles as "non-burning", slow-burning", and "fast-burning" fabrics should assist in the development of trade flammability standards and selection of suitable testing procedures.

Flammability legislation, pioneered in England as early as 1913, has recently been incorporated into the laws of California and spread for consideration to the legislatures of twenty-four other states. Uniform national regulation has been sought through pending Federal legislation and commercial standards. Municipal ordinances controlling the flammability of decorative materials in places of public assembly have become more common. As a consequence, flame-resistant finishes are finding wider applications to certain classes of decorative and clothing fabrics, either due to the requirements of law or implied warranty or as additional selling points for certain end-use purposes. The demands of the Armed Forces during World War II and subsequent expanding applications to consumer goods gave stimulated chemical research in the field of flameproofing. Considerable insight has been gained into the chemical nature of flameproofing compounds and the mechanisms by which they retard or prevent the flaming and glowing of fabrics. To even a greater extent, development work has led to several practical formulations capable of commercial exploitation as flame-resistant textile finishes. In addition to the many water-soluble salts and mixtures, insoluble retardants, capable of rendering fabrics permanently flame-resistant or flameproof are being applied from solution, suspension and emulsion vehicles.

The availability of such finishes for textile fabrics suggest a new approach to the problem of fire prevention. Supplementing the fire-protective and fire-combative measures of the past, the flameproofing of drapery, upholstery and decorative fabrics removes the balance of the fuel available for flaming combustion and puts the emphasis on true prevention of fire.

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## "Synthetic Detergents in Textile Processing"

By H. C. BORGHETTY

*General Dyestuff Corporation, New York City*

THE various groupings of synthetic detergents presented on the market today will be covered and endeavor made

to pigeon-hole each type according to ideal uses, stressing the drawbacks and advantages.

An attempt will be made to clarify the controversy which wages between synthetic detergents and soap, and the speaker will endeavor to show that synthetic detergents are valuable supplements to soap. When used in the correct way, synthetic detergents are of undisputed value, whereas when promoted indiscriminately as soap substitutes they are very often apt to be found lacking.

Combinations of synthetic detergents and soap and the advantage to be gained by their use, will be brought out so that the two industries, soap and synthetic detergent, can travel side by side rather than on opposite sides of the fence.

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## "Permanent Finishes on Rayon"

By LEONARD SHAPIRO

*Alrose Chemical Company, Providence, R. I.*

THE textile finishing industry is now in the midst of a revolution in which the emphasis of consumer demand is increasingly on permanence, durability and washability. This applies not only to the fabric or garment and its dimensions, but also to the dyes and finishing agents employed. Notable progress in the achievement of these objectives has been made in the past few years, especially in the following lines:

*1. Permanent Shrinkage Control:* The resin techniques have now been supplemented by the even more permanent caustic-swelling method and aldehyde methods described in greater detail in this paper.

*2. Durable Resin Finishes:* In addition to the older thermosetting resins, a fairly complete line of thermoplastic resin emulsions (vinyl, acrylic, styrene) are now available. Alkali-celluloses are also in use.

*3. Durable Proofing Treatments:* Durable water-repellency, as well as flameproofing and mildew-proofing treatments, are already well-known in the finishers repertoire.

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## "Anionic Substantive Softeners"

By EARLE D. McLEOD

*Arnold, Hoffmann & Co., Inc., Providence, R. I.*

ANIONIC substantive softeners are a group of textile auxiliaries developed as softening agents for all types of fibers. These compounds are alkali metal salts of fatty amino* or fatty carbamino compounds** in which all nitrogens are trivalent.

The usual cationic softeners represented by simple fatty amides or fatty imidazoles and sold as their acid or alkylated salts in aqueous pastes have several drawbacks: dyed textile fabrics thus treated may show decreased light fastness, poor resistance to heat and high chlorine retentions and noticeable throwing of their final dyed shades.

Anionic type compounds have no effect on the light fastness of dyestuffs, give good heat stability or non-yellowing of white goods, have minimum chlorine retention due to complete substitution of the nitrogen, exhaust readily and are equally wash fast. As low as one pound to one and one-half pounds of softener are sufficient to impart a soft finish to 1200-1500 yards of rayon fabrics.

The properties of anionic softeners indicate usefulness not only as pure finishing agents, but also in conjunction with crease-resistant finishes, anti-fume compounds, starches and other finishing compounds. They should not be used in conjunction with products of pH below seven, as precipitation will occur.

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* U. S. Patent No. 2,344,260.
** U. S. Patent No. 2,344,259.

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## Fundamental Research Group Meeting

Parlor D
2:00 P.M. to 5:00 P.M.
*Chairman:* DR. L. ARMSTRONG
*Armour & Company, Chicago, Illinois*

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## "Studies on Nylon Dyeing: Effect of Dyeing Procedures"

By LOUIS I. FIDELL, DR. G. L. ROYER and H. E. MILLSON

*Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J.*
(Presented by Mr. Fidell)

AN investigation of nylon dyeing covering the application of dispersed, acid, pre-metalized, direct, and chrome dyes by studying the effects of the use of no acid, acetic acid, formic acid, and sulfuric acid upon the rates of exhaustion and tinctorial values at different stakes of dyeing. Spectrophotometric methods were used to obtain the exhaustion and reflectance data and microscopical methods were used to observe the distribution of the dye in the fibers at the various stages.

The time-temperature procedure previously used in the study of other fibers was followed in making the dyeings. Curves and tables are shown giving the percentage exhaustion and color value at the various temperatures and times for representative dyes in each of the classifications. The chromation of the chrome dyes was studied under the same conditions of time-temperature and acid as used in the dyeing.

Dyeings for this investigation were made at constant liquor to nylon ratio of 30 to 1 in the Launderometer.

A study of the "blocking effect" of several dyes was made and the results are illustrated by Dyeometer exhaustion curves.

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## "The Effect of Fiber Physical Differences Upon the Dyeing of Nylon Yarn"

By DR. R. J. THOMAS (Dyestuff Division) and DR. B. F. FARIS (Nylon Division)

*E. I. duPont de Nemours & Co., Inc., Wilmington, Del.*
(Presented by Dr. Thomas)

NYLON staple is being spun more and more into yarns which are knit into hosiery, sweaters, undergarments and bathing suits. Other nylon staple yarns are also woven into suitings, blankets, upholstery fabrics and carpeting. The staple is "tailor made" in different deniers and in different staple lengths depending upon its particular end use. In the dyeing of nylon staple, many difficulties intrinsic in the dyeing of nylon filament fabrics with acid colors are avoided. The behavior of these and other classes of dyestuffs on staple and on filament nylon are compared.

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## "Some Aspects of the Aging of Coated Fabrics"

By E. V. PAINTER

*Fabric Research Laboratories, Inc., Boston, Mass.*

COATED fabrics are composed of two separate systems which differ from one another both chemically and structurally, one system being a continuous flexible film and the other an intermittent structure of individual fibers and yarns. The aging of coated fabrics is a result of the effect of: (a) the individual resistance to degradation of each system, and (b) the interaction of the two systems. The first factor depends upon the inherent chemical nature of each system, while the second factor determines the extent to which each system controls the final result.

The interaction of the two systems is at present the least understood property of coated fabrics. It is affected by the geometrical position of the film *on*, and/or *within* the fabric, as well as the sup-

port, protection, or interference each system affords the other.

An attempt has been made to study this interaction by measuring the tensile and tear strength characteristics of the fabric with and without the film, both before and after aging of the coated fabric by the following means: (a) in an oven at 220° F., (b) in a Weatherometer, and (c) outdoors exposure. The work covered is part of a study being made of raincoat and poncho materials for the Army Quartermaster Corps by the Fabric Research Laboratories.

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## Hosiery Group Meeting

Parlor K
2:00 P.M. to 5:00 P.M.
*Chairman:* EDWARD J. SIEGRIST
*Holeproof Hosiery Company, Milwaukee, Wis.*

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### "Current Developments in Hosiery Dyeing and Finishing"

By EDWARD J. SIEGRIST

THIS paper will be a general discussion covering various phases of general hosiery dyeing, such as temperature, pH control, and the effect on the finished product.

The suitability of acid colors vs. acetate for various shades on men's and women's hosiery will also be discussed, as well as the effect of preboarding and dyeing temperatures on multi-filament and mono-filament nylon yarns.

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### "A Simple Tester for Evaluating the Snag Resistance of Nylon Hosiery"

By DR. J. E. SMITH and T. D. JOHNSON, JR.
*Fine Chemicals Division, E. I. duPont de Nemours & Co., Inc., Wilmington, Del.*
(Presented by Dr. Smith)

A NEW, simple tester for evaluating the snag resistance of nylon hosiery is described in detail. A detailed procedure for using the snag tester and a comparison of results obtained by this new tester with other testers currently in use is given. Results obtained by the new test method are shown to correlate qualitatively with the performance of nylon hosiery in service tests.

The snag resistance of nylon hose is determined by observing the number of snags developed on nylon hose by drawing them over a rounded surface of sandpaper held by the tester. The snagged hose are given a light hand wash, and reboarded. The snags remaining after this second operation are classed as permanent distortions of the stitch. The effect of such factors as variation in curvature of the mounted sandpaper surface, rate of drawing the hose over the paper, and the grade of sandpaper used on the degree of snagging obtained is discussed. The method differentiates sharply between nylon stockings having excellent, fair and poor snag resistance.

It is believed that the best finishes for nylon are those which impart resistance to distortion of the stitch by increasing the coefficient of friction between the yarns and thus producing anti-slip properties at points of contact.

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### "Nylon Staple in the Hosiery Industry"

By DR. W. B. VINCENT
*Nylon Division, E. I. duPont de Nemours & Co., Inc., Wilmington, Del.*

INVESTIGATION of nylon staple in the men's half hose and women's anklet fields has been conducted by several hosiery manufacturers in conjunction with the Nylon Division of the duPont Company. Socks from nylon staple and from blends of nylon staple and wool have been produced and the wear, comfort and associated properties have been studied.

Nylon's abrasion resistance and stability in washing make it an outstanding hosiery fiber. In addition to these contributions, socks with good appearance, hand and comfort can be produced from nylon and nylon-wool blends. Lightweight "wool type" socks are practical to produce from spun nylon yarns, and interesting results have been obtained with nylon-cotton and nylon-rayon blends.

The denier of the staple recommended varies from 3 denier or blends of 3 and 1½ denier for lightweight socks to 6 and 10 denier for heavy athletic socks.

Low tension and loose stitch knitting should be employed to achieve the best results. Slight modification in yarn size from that normally used for worsted yarns is often advisable. The dyeing and finishing of nylon socks are straightforward processes.

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## Testing Group Meeting

Parlor M
2:00 P.M. to 5:00 P.M.
*Chairman:* MISS LAURA E. PRATT
*Sears, Roebuck & Company, Chicago, Ill.*

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### "Measurement of Stiffness and Resiliency as Related to Textile Finishing"

By DR. LYMAN FOURT
*Harris Research Laboratories, Washington, D. C.*

TWO methods have been developed, one for improved measurement of stiffness and resiliency, the other for comparison of resistance to mussing. Used together, these methods aid the study of the effect of finishes.

Stiffness and resiliency are measured by forming the natural fold of the fabric, and measuring the height of this fold through a range of loadings. This is done on an automatic recording balance, which is sufficiently sensitive to indicate the initial height of the fold, but has sufficient range of loading to cover the transition from draping folds to crushing or creasing. Stiffness can be measured by two characteristics, the initial height and the work done in folding. Resiliency can be measured in three ways: by the amount of energy recovered in unfolding, by the ratio of recovery energy to the work of folding, and by the recovery of form, that is, the ratio of recovered height to initial height.

Resistance to mussing is compared by tumbling strips of cloth in a jar which rotates end over end. Random disposition of the cloth is secured by attaching rubber stoppers at the ends of the specimen. Other rubber stoppers are included in the load to aid in mussing, and moisture effects are secured by including sponges, squeezed out to a controlled water content. Although this test depends on visual comparison, it demonstrates relationships with stiffness and resiliency, and other factors such as choice of fiber and finish.

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### "Problems Encountered in a Department Store Laboratory"

By ARTHUR S. EICHLIN
*Marshall Field & Company, Chicago, Illinois*

ANALYSIS of consumer returns for the past several months as related to quality standards. The relationship of fast colors, protective finishes and shrinkage control processes available. Also the influence of increased export shipments and the manufacturer's difficulties with sources of supply.

## "Determination of the Solubility of Dyes"

By C. L. ZIMMERMANN and DR. H. R. McCLEARY

*Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J.*

GREATER use of continuous dyeing methods and improved designs in dyeing machinery have produced a need, not only for reliable dye solubility data, but also for methods of increasing dye solubility. The solubilities of dyes may be increased or decreased by the addition of certain diluents. For this reason a different approach must be made in determining the solubilities of commercial dyes than is used in determining the solubilities of pure chemical compounds. A method of determining the solubilities of commercial dyes is described and the theoretical aspects of solubility are discussed.

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## "Estimation of Vat Printing Paste on Cloth and an Electrometric Analysis of the Critical Chemical"

By DR. H. E. M. SPECHT

*Cranston Print Works Company, Cranston, R. I.*

IN search for some means of estimating amount of vat print paste on printed material without resorting to dyestuff analysis or colorimetric measurements, the chemical behavior of one of the ingredients of the paste furnished a clue as to the manner in which this might be accomplished.

If we make two reasonable assumptions:

(1) That composition of print paste remains constant from batch to batch,

(2) That the reducing agent, sulfoxylate formaldehyde, has a reasonably constant composition,

the amount of print paste or dyestuff on the cloth may be estimated quite closely. The method used depends upon the quantitative oxidation of sulfoxylate and bisulfite to sulfate in alkaline hydrogen peroxide, and involves the following steps: extract dry patch with cold water, filter off cloth, boil slightly alkaline filtrate with $H_2O_2$, acidify, boil further to coagulate the dyestuff, filter through fine paper or asbestos pad, precipitate sulfate with $BaCl_2$, and treat in conventional manner. $BaSO_4$ should not weigh more than 200-300 mg. Error due to other ingredients in print paste containing S is negligible. Results are easily converted to per cent paste of dyestuff.

Amount of active reducing agent in the paste may be determined at any time by an electrometric titration of the diluted paste acidified with HAc and stirred with $CO_2$, using standard iodine. Voltage change is very sharp at end-point.

# The Mid-West Section—

*(Concluded from Page 589)*

the consensus of opinion that fall, winter and spring meetings should be held and that, later on, plans would be made for a summer outing. With few exceptions, this schedule has been followed, with October and January or February meetings in Chicago, April or May meetings in Milwaukee, and an outing late in June.

### Past Chairmen

Chairmen and dates of holding office are:

Carl E. Bick—1929-1930
Edward W. Morgan—1931-1932
Carl E. Bick—1933
Eric F. Hempel—1934
Arthur T. Brainerd—1935-1936
Edward J. Siegrist—1937-1938
Herman F. Boxser—1939-1940
Archie G. Alexander—1941-1942
Virgil T. Hartquist—1943-1944
Aloysius J. Feit—1945-1946

### Programs

The interests of Mid-West members are diversified. The officers have had many problems in securing speakers upon subjects that would appeal to all or most of the members. Non-technical papers and talks have been presented, but it is agreed that such are not desirable. The willing cooperation of members in taking active part in our programs has added greatly to the interest and variety.

During the past few years we have adopted two new ideas:—"Information Please" and Rumpus Committee. "Information Please" discussions have been held regularly for the past two years. A panel of "experts" is selected and members invited to submit questions in advance, through the Secretary. At the next meeting, the questions are read and answered. In many cases, this promotes a lively discussion and exchange of opinion which is truly an AATCC objective. Chairman Hartquist, in 1944, appointed the first Rumpus Committee: a group of non-officeholders, with instructions to meet, present suggestions for improvement in attendance, and for increasing participation in the benefits to be derived from membership. Many Rumpus Committee ideas have already been adopted and it is felt that such cooperation will be of real assistance to the officers.

### Amateur Night

On October 16, 1943, our famous "Amateur Night" performance was given. Members and guests provided a two hour show including musical, magic and dancing acts that were truly amazing. Even the orchestra was assembled from our own group. We have not heard that any other Section has displayed such talent.

William D. Appel, Past President, visited the Mid-West Section on February 12, 1944 and presented an interesting address on the Aims and Accomplishments of the Association.

### Growth of Section

During the first few years our membership grew slowly but as the Association became more firmly established and its work better known, our Section has grown along with the others. Undoubtedly the publicity attending sale of Corporate Memberships, the work of the Research Committee, and the issuing of the Year Book, along with publication of THE REPORTER, have convinced chemists, colorists and executives alike of the advantages of AATCC membership.

Mid-West now has about 360 members —active, junior, associate and corporate— and all send Greetings on this occasion of a national convention.

### Present Officers

The present officers of the Mid-West Section are as follows:

*Chairman:* A. J. Feit
*Vice-Chairman:* George E. Osha
*Secretary:* George B. Chabot, Jr.
*Treasurer:* Joseph H. Jones
*Councilors:* E. W. Camp
Samuel Klein
*Sectional Committee:* E. J. Siegrist
Herman Boxser
A. G. Alexander
A. J. Olson

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# The Convention City—

*(Continued from Page P593)*

Livestock Exposition and Horse Show, or the All-American Golf Tournament. These are strictly Chicago attractions. They are held here year after year.

Do you like stardust in your entertainment? Then try the Pump Room, Boulevard Room, Cameo Room, Empire Room, Mayfair Room, or the Camellia House.

The Chez Paree, Edgewater Beach Walk, Latin Quarter, and Rio Cabana are also famous.

Shopping in Chicago's mammoth department stores and exclusive salons is a popular pastime for many visitors. A package bearing a homecoming gift from Field's, Carson's, Mandel's, Stevens, Martha Weathered, or Saks Fifth Avenue, to mention just a few of the many fine places to shop, always receives a very special welcome.

Chicago's museums, its Art Institute, the Planetarium, Aquarium, opera, symphony orchestra, lake cruises, social settlements, and the zoos, each have a special appeal.

The Buckingham Memorial Fountain in Grant Park and Bushman, the world's most perfect gorilla in captivity, at Lincoln Park Zoo, each recently performed for their twenty millionth visitor.

The Union Stock Yards are an outstanding attraction. So too are the Chicago Board of Trade, the huge mail order houses, and the numerous radio broadcasting studios.

Chicago's great universities are popular with many visitors, as are the numerous cathedrals and other places of worship, including the Bahai Temple on the city's north shore.

You can tour the world in Chicago without ever stepping outsile its boundary lines. This is because practically every foreign race is represented in the city's cosmopolitan population, and since many of these races have formed their own communities in which old world characteristics have been preserved.

Chicago has more people of Polish ancestry than has Warsaw, Poland; more people of Swedish origin than Stockhlm. Excellent restaurants featuring foreign food and entertainment are to be found everywhere.

Little Bohemia at 26th and Halsted; Little Italy at Taylor and Halsted; Little Russia at Milwaukee and Western; Chinatown, and the Ghetto, are but a few of the many places filled with old world charm.

Grant Park on Chicago's marvelous lake front is the city's front yard. Here you may stand and view as at a movie the swift flow of city life as it surges down Michigan Avenue. The impression you get is one of power, of confidence, of organized effort.

The Michigan Avenue skyline is one of the world's most impressive. Behind that skyline are cities within cities, each functioning with machine-like precision . . . and in the aggregate forming Chicago, one of the marvels of the world.

It would take a good part of a lifetime to see it all. If your time is limited, it is best to make your plans in advance. The Visitors Bureau of The Chicago Association of Commerce and Industry, One North LaSalle Street, Chicago 2, Illinois, can help you in the planning.

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## Meeting, Philadelphia Section

THE Philadelphia Section held their last meeting in the English Room of Kugler's Restaurant, Broad and Chestnut Streets, on September 26th.

Philadelphia Chairman, Walter F. Fancourt, III, opened the meeting by introducing Mr. Lund and Mr. Collins, visitors from England, who were given a hearty welcome. He then introduced L. Mason of the S & M Dye Works who reminded all present to try to attend the Philadelphia Textile Foundation Dinner and Cocktail Party to be held at the Warwick Hotel Wednesday, Otcober 1. Mr. Fancourt then read the letter received from Elliott Morrill, Chairman of the Publicity Committee for the Convention to be held in Chicago October 23, 24 and 25, urgently requesting all to try to attend and to get in touch with T. Atkinson of Scholler Brothers, who will gladly make train reservations. He also reminded all present to please make note of the change of time in the train schedule. He then reminded all present, including their friends and guests, of the Silver Jubilee Dinner and Cocktail Party to be held at the Bellevue-Stratford Hotel November 8.

Mr. Fancourt then read the report of the Nominating Committee for the election of officers for the year 1948 as follows:

*Officers*

Arthur Gordon, Chairman.
James Dixon, Vice-Chairman.
A. E. Raimo, Treasurer.
John W. Jordan, Secretary.

Thomas H. Hart proposed by John W. Barton, motion seconded by Edgar R. Beigbeder.

*Sectional Committee*

F. V. Traut.
John Koch
M. H. Klein
E. C. Diehl

W. R. Smith proposed by George Moore, motion seconded by Fred V. Traut.

Richard L. Jones proposed by John J. Tomalino, motion seconded by Joe A. Kelly.

Ed S. Pierce proposed by De Haven Butterworth, motion seconded by Dr. Miles A. Dahlen.

*Councilors*

W. F. Fancourt.
C. R. Baeringer.
L. O. Koons.
Prof. P. Theel.
A. W. Etchells.

This will necessitate an election. Ballots will be mailed to all active paid-up senior members in the very near future.

The main speakers of the evening were then introduced, Daniel Frishman and Dr. Milton Harris of Milton Harris Associates, Washington, D. C., who gave a talk on "Reaction Between Wool and Active Chlorine". This subject was very enthusiastically received. Numerous questions were asked and answered.

There were 155 present for dinner.

Respectfully submitted,

A. E. Raimo, *Secretary.*

## EMPLOYMENT REGISTER

***This column is open for four insertions per year, per member, without charge. Blanks can be obtained from, and filed with, the Secretary of the Association, Lowell Textile Institute, Lowell, Mass. It is understood that these will be open to inspection by prospective employers, who can obtain further information from the Secretary.***

*47-35*

*Education:* B.S. in Textile Chemistry, North Carolina State College, 1947.

*Experience:* Analytical chemist, construction and operation of water purification plants, pulp and paper manufacture including bleaching; Navy technician. Age 25; single; references.

*47-36*

*Education: University graduate.*

*Experience:* Consumer relations and textile laboratory management.

Age, 37; single; references; will consider any location.

*47-37*

*Education:* Lowell Textile Evening School.

*Experience:* Dyer, variety of fibers, asst. foreman.

Age, 30; married; references.

***All correspondence regarding the Employment Register should be sent to the National Secretary***

# Modern Aids to Cleanliness

## *Industrial, Public and Personal* *

**O. M. MORGAN**

*New Products Division*

*National Aniline Division, Allied Chemical and Dye Corporation, Buffalo, N. Y.*

**Abstract**

*Modern synthetic organic detergents are playing an increasingly greater part in the cleaning and sanitation programs in our factories, public meeting places and homes. The present article endeavors to provide a birdseye view of these applications with special reference to the uses in the textile industry.*

CLEANLINESS, either industrial, public or personal, has an important bearing on the efficiency, health, comfort and happiness of any nation. Industrial cleanliness contributes to the manufacture of high quality products whether they be foodstuffs, fabrics, automobiles, airplanes or battleships. Public cleanliness as represented by buildings, streets, trains, buses and houses, contributes substantially to the good health of the populace and stamps a community as being either progressive or backward. It is a well recognized fact that personal cleanliness is a prime requisite of good health and has a powerful effect on the building of character.

Soap has been recorded in very early histories but its general use was slow in developing because it was not available to the masses. In these early days cleanliness was not regarded as being too important and efforts to attain cleanliness were rather crude and more mechanical than chemical. Until the 18th century soap was the only general cleansing agent known. The present discussion concerns new, but already well established, cleansing agents which are playing an important part in our everyday life.

The new cleansing agents have many interesting properties. They are not rendered inactive by sea water. This is an important consideration in view of the vast amount of salt water on this earth and the relatively small amount of fresh water. They are not precipitated by hard water, acids, alkalies or by heavy metal salts such as iron, copper or zinc and retain their cleansing action under these conditions. For these reasons the chemist recognized that there was a definite demand for such products which would perform their duties under a wide range of physical and chemical conditions.

In the 19th century sulfonated vegetable oils came into use and were the only novel wetting and cleansing agents used up to World War I. In the early 1920's some synthetic wetting agents were introduced in the United States. These were followed by expensive synthetic organic detergents and as their potentialities were realized, considerable interest developed in the chemical industry to produce improved and less expensive types.

Real progress was made in the early 1930's. It was in this period that the National Aniline Division developed a line of synthetic organic detergents and wetting agents, using petroleum as the basic source of raw material, rather than animal or vegetable fats which had previously been used. These detergent products are inexpensive and are distributed under the trademark "Nacconol"*. The uses of these products are many and varied and are not confined to cleansing applications as will be developed later.

The materials to which we refer are light colored, dry products in flake or powder form. They are very soluble in water and are practically odorless. They are neutral products which are stable to hard water, acids and alkalis and will wet and cleanse rapidly at low concentrations under any of these conditions and over a wide temperature range. They possess foaming, emulsifying, dispersing, penetrating, spreading and softening properties.

These particular synthetic organic detergents are chemically inert to a unique extent. They are lacking in easily reactive chemical groups which points very definitely to the fact that their functions as wetting agents, detergents and surface active agents generally are physical in nature rather than chemical. These physical functions are most advantageously exercised by products which exhibit the maximum of stability and simplicity in chemical structure with the minimum of chemical reactivity. A cleaning operation as a physical phenomenon may be compared with lubrication in both of which cases chemical inertness and stability are of paramount importance.

Until fairly recently hard water has presented many problems both in industrial and domestic use. Prior to the advent of suitable synthetic organic detergents steps were taken to correct the water condition to suit the detergent products that were then available, such as, soaps, alkalis, etc. Water softening systems were installed for the removal of hardness from fresh water and large distillation units were standard equipment on ocean going vessels for the treatment of sea water. This picture is now changed. The hardness of fresh water may be disregarded when the proper synthetic organic detergent is used and on ocean going vessels the amount of water that must be distilled is substantially reduced. Many cleaning jobs can be effected economically and efficiently by using these new products in sea water. This change in procedure in the handling of available water supplies might be compared with the inventive genius of the man who took the flanges off of railroad tracks and put them on the wheels, or with the genius who first conceived the idea of wearing shoes thereby, in effect, covering the world with a leather carpet.

### Industrial Applications

It is difficult to mention an industry where the synthetic organic detergents are not being used as a cleansing agent

* Presented at meeting, South Central Section, June 7, 1947.

* Trademark "Nacconol" registered U. S. Patent Office by Allied Chemical & Dye Corporation.

The statements made herein with respect to "Nacconol" products are expressions of the manufacturer's opinion, based upon careful tests and investigations, and are not warranties.

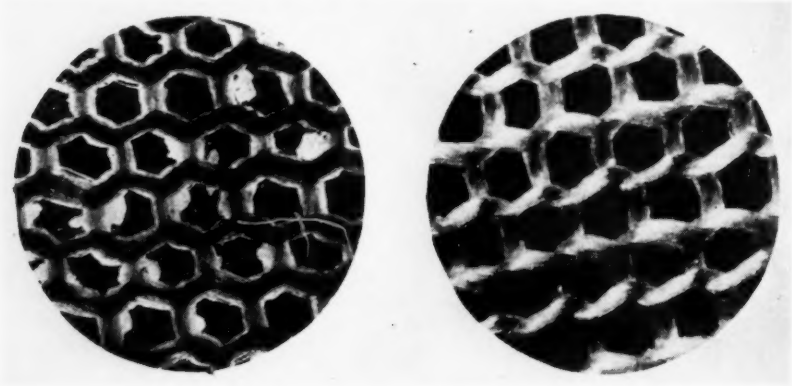

*Figure I—Silk Hosiery with Lime Curds.*

*Figure I presents photomicrographs of silk hosiery that has been washed and rinsed in very hard water. The hosiery on the left was washed with soap. Lime soap curds are plainly visible. The hosiery on the right was washed with a synthetic organic detergent and no insoluble residues are left behind.*

or in some other capacity. About all that can be accomplished in this space is to provide a birdseye view of these applications.

*Textiles*

Practically everybody wears clothes and practically everybody is interested in clothes to a greater or lesser extent. The textile industry was the first large user of synthetic detergents and wetting agents due to the difficulties which this industry had experienced with soap. The hard water soap curd with which we are all familiar causes the textile man and particularly the dyer a great deal of trouble. Where soap curds adhere, he finds undyed specks or spots on his fabrics. These curds are good waterproofing agents and are similar to the heavy metal soaps which are used as water repellents and waterproofing agents. Of necessity, numerous textile manufacturing operations are carried out under acid conditions and it is obvious that soap could not be used here. We will deal briefly with each of the commonly used textile fabrics.

*Wool*

A synthetic organic detergent which is stable to acid and alkali can be applied to advantage in practically all the wet processing operations leading up to finished woolen or worsted fabrics. It may be used economically in the scouring of raw stock, in the carbonizing of either raw stock or piece goods, as well as in the acid fulling of piece goods or in the scouring of fabrics containing animal, vegetable or mineral oil lubricants. In the alkaline fulling of piece goods certain synthetic organic detergents may be used to replace 25-50% of the soap that is normally used. In the later washing operations it causes the soap to rinse out of the goods much more rapidly, thereby reducing the time of the scouring cycle 20-30%. For the scouring of wool piece goods straight from the loom suitable synthetic organic detergents may be used by themselves or in conjunction with certain salts such as sodium chloride or sodium bicarbonate to produce very clean goods ready for dyeing. Since different types of synthetic organic detergents vary widely in their ability to remove mineral oil lubricants, care should be taken in their selection. When small quantities of synthetic organic detergents are added to the dye bath a desirable leveling action is obtained. Products of high chemical stability are particularly suited for use in the dyeing of acid colors.

*Cotton*

Cotton, as produced by nature, is a much cleaner fiber than wool, but natural waxes and gums must be removed by boiling with alkalis at high temperatures and under pressure. Mill owners advise us that certain synthetic organic detergents serve a useful purpose in these kier boiling operations by producing cleaner goods and reducing re-kiering to a minimum. They also advise that in subsequent peroxide bleaching operations these products allow the peroxide to penetrate into the goods more rapidly to perform its bleaching action before expending itself elsewhere. Cotton yarns must be impregnated with a starch-tallow sizing prior to weaving. The addition of a suitable synthetic organic detergent to this sizing composition causes it to penetrate the yarns more thoroughly and thereby provides greater stiffness with lesser amounts of starch. The yarn, at the same time, has a smaller effective diameter so that a greater yardage can be wound on the same beam. This is very important to the cotton mill man. The addition of certain synthetic organic detergents assists in the desizing of cotton through the use of enzymes. They speed the rinsing of dyed raw stock, impart softness to it and improve the dyeings obtained on skeins and fabrics. Print washing formulae are being developed using combinations of synthetic organic detergents and soap or synthetic organic detergents and salt which have served to reduce mark-off and to an appreciable extent.

*Synthetic Fibers*

Rayon, a man made fiber, has been improved greatly in the last decade. A number of these improvements can be at-

**COMMERCIAL RATING OF DEGUMMING FORMULAE**

| *Commercial Rating* | *Frazier Machine Endurability Rating-after Washing (Cycles)* | *Formula* | *%* | *Cost per 100 lbs. Silk in the gum* | *Percent Cost-Reduction over 10% Soap* |
|---|---|---|---|---|---|
| 1 | 4827 | Nacconol NRSF<br>Sod. Silicate | 1<br>5 | $0.482 | 56.2 |
| 2 | 3782 | Nacconol NRSF<br>S. S. Carbonate | 1<br>3 | 0.481 | 56.4 |
| 3 | 3132 | Nacconol NR<br>Sod. Silicate | 3<br>5 | 0.472 | 57.1 |
| 4 | 2575 | Nacconol R<br>S. S. Carbonate | 3<br>3 | 0.471 | 57.2 |
| 5 | 1843 | Soap | 10 | 1.10 | .. |
| 6 | 406 | Soap<br>Sod. Silicate | 6<br>5 | 0.742 | 31.8 |
| 7 | 327 | Soap | 15 | 1.65 | —50.0 (increase) |
| 8 | 164 | Soap<br>S. S. Carbonate | 6<br>3 | 0.741 | 32.7 |

*Figure II—Silk Degumming with Synthetic Organic Detergents*

*Natural silk when degummed with "Nacconol" NRSF plus sodium silicate or sodium sesquicarbonate exhibits higher durability as measured by the Frazier Machine than when soap is used. Degumming costs at 1940 prices were reduced more than 50%.*

tributed in part to the use of very stable synthetic organic detergents and wetting agents. In the manufacture of the actual rayon fiber an acid and alkali stable synthetic organic detergent serves several useful purposes, chief among these being its ability to keep the spinnerettes clean and usable for longer periods of time. When this fiber is finally spun into yarn or woven into fabrics, suitable synthetic organic detergents assist in the scouring, dyeing and finishing operations. It is also used in the scouring and dyeing of nylon fabrics.

*Silk*

Although natural silk now has several outstanding competitors in its field, it will still be used for a variety of fabrics. Silk, as produced by nature, consists of fibroin and sericin. The fiber portion, or fibroin, is protected by a natural gummy sheath known as sericin which serves to protect the fiber during throwing, spinning, knitting or weaving operations, but must be removed prior to dyeing and finishing. Sericin is soluble in mild alkaline solutions, but at the same time the fibroin is adversely affected by alkalis and great care must be taken in processing to avoid the use of strong alkalis. For this reason it has been common practice for years to degum silk with soap solutions of the order of 0.5% based on the weight of the liquor. Within the last ten years it has been demonstrated successfully that natural silk may be degummed with a suitable synthetic organic detergent and liquid silicates or sodium sesquicarbonate to provide a fiber with even better strength and dyeing characteristics than can be obtained with soap. This process is very inexpensive and very simple to control.

*Leather*

Nearly everybody wears shoes and most people, at least in the cooler climates, appreciate a soft leather jacket at one time or another. Acid stable synthetic organic detergents have seen rather long service in the leather industry with excellent results in the wetting of crusted leather, in the degreasing of sheepskin from which most of our leather jackets are made and in the cleaning of skins prior to tanning and dyeing. It is also used in the leather dyeing operations and for the scouring of shearlings.

*Paper*

The finer grades of writing paper and tissues probably met these new detergents somewhere along the way. They are used with alkalis in the cooking of rags from which our fine writing paper is made, and for the washing of wood pulp which is used to prepare our fine cleansing tissues. Even higher grade wood pulp that has been washed with these detergents is used as a raw material in the manufacture of rayon and explosives. The paper mill man finds them very helpful in the washing and conditioning of paper machine felts and also for the de-inking of used paper stock prior to re-use.

*Metals*

Metal for tacks, tricycles or tanks must be cleaned at some stage of its manufacture. In this connection chemically stable organic detergents are widely used either alone or in conjunction with acids or alkalis. They are also used with acids in the pickling of steel, particularly where a pickling and cleaning job is required as a result of a single operation. Their addition to certain types of metal plating solutions eliminates the formation of gas pits and in certain instances provides the plate with greater ductility. More recently, the aircraft industry has discovered that suitable synthetic organic detergents serve a very useful purpose in the acid etching solutions used in the preparation of aluminum for spot welding. In the textile industry these products serve as metal cleaners by removing lime soap scums from the machines. Care should be taken to clean the machines of these scums before using the synthetic organic detergents otherwise the first few loads of fabrics may be contaminated.

*Paint*

Synthetic organic detergents are widely used in the washing of painted surfaces. Interior house paint can usually be washed satisfactorily with the product itself with no more chemical damage to the paint film than water would cause by itself. For the washing of exterior painted surfaces where the dirt is deeply ingrained in the paint, it is generally advisable to use it in conjunction with an alkali such as trisodium phosphate to minimize the amount of physical labor involved in the paint washing job. This, of course, removes a thin film of paint from the surface and the dirt is carried with it. When it is desired to completely strip a paint film from a surface, usually strong alkaline solutions are required. The addition of a synthetic organic detergent to these solutions provides for more rapid and thorough removal of the paint.

*Foodstuffs*

In order that a person may continue living he must continue eating. In order that he may enjoy this necessary business

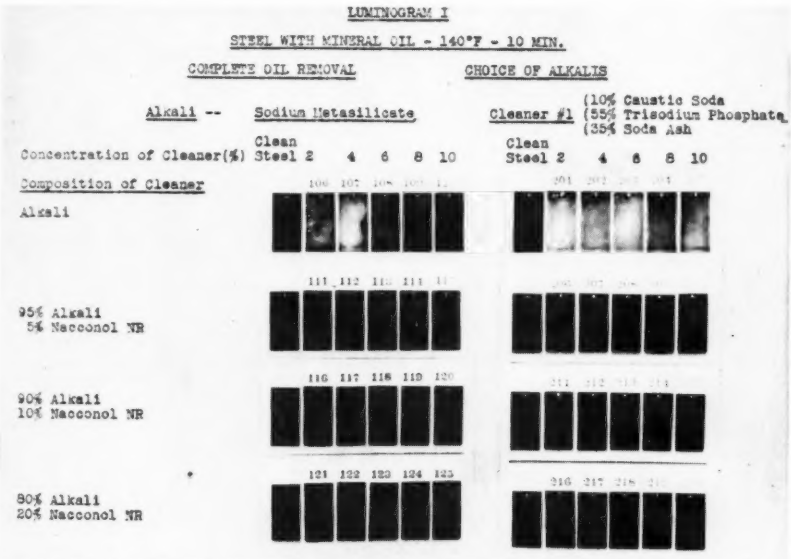
LUMINOGRAM I
STEEL WITH MINERAL OIL - 140°F - 10 MIN.
COMPLETE OIL REMOVAL
CHOICE OF ALKALIS
Alkali -- Sodium Metasilicate
Cleaner #1 (10% Caustic Soda (55% Trisodium Phosphate (35% Soda Ash
Concentration of Cleaner(%) Clean Steel 2 4 6 8 10
Clean Steel 2 4 6 8 10
Composition of Cleaner
Alkali
95% Alkali 5% Nacconol NR
90% Alkali 10% Nacconol NR
80% Alkali 20% Nacconol NR
Luminogram #1 shows that the above alkalis, when compounded with 5% Nacconol NR, effect complete oil removal at a 2% concentration. Sodium metasilicate alone effects nearly complete mineral oil removal at a 10% concentration. Cleaner #1 does not approach complete oil removal even at a 10% concentration. The use of more than 5% Nacconol NR in these mixtures does not appear to be necessary for the removal of this type of oil.

*Figure III—Metal Cleaning with "Nacconol" NR and Alkali. These clean steel panels were photographed under ultraviolet light. Mineral oil residues show a white fluorescence while the clean metal appears black. It will be noted that the addition of "Nacconol" NR to either sodium metasilicate or a mixed cleaner produced a very marked increase in the cleaning efficiency.*

of eating and relish the food which he consumes, he must be assured that the food and everything which has touched it has been as clean as is humanly possible. The food industry is one of the largest, if not our largest industry. The applications of suitable synthetic organic detergents in the food industry are many and varied. Certain non-toxic types will be manufactured in a form which is essentially tasteless and odorless. The actual addition of these materials to food products creates improvements and advantages which had not been obtainable previously. This technology is in development at the present time and it suffices to say that their addition to certain types of confectionery, cocoa, flour, salad dressing, etc. points to some interesting and valuable results. The curing of certain cuts of meat may also be assisted by these products.

The industrial applications of synthetic organic detergents in the food manufacturing industry where they do *not* emerge as an integral part of the finished product are so numerous and possibly so obvious that they will only be dealt with briefly. For instance, in the dairy industry the washing of bottles, cans, cream separators, pasteurizers, refrigerators, trucks and general milk handling equipment is greatly facilitated by their use. An odorless, free rinsing product is essential here.

Certain types of synthetic organic detergents are peculiarly suited to the washing of refrigerators, or any cold surfaces, since they are effective cleaners under these low temperature conditions. The addition of this type of product to sodium hypochlorite solutions commonly used for dairy sterilization greatly enhances its sterilizing ability and acts to conserve supplies. Dairy walls are painted or sprayed with synthetic organic detergent solutions possessing bactericidal and fungicidal properties to prevent mold growths. These products can be used also as a preservative for milk or cream samples which are stored for some time prior to the running of Babcock butterfat tests. Their ability to lower surface tension provides a flat meniscus or line of demarkation between the butterfat and aqueous layers in the running of these Babcock tests. This makes the butterfat content easier to estimate.

*Canning Industry*

It took food rationing and blue stamps and blue plastic coinage to convince us how important the tin can and its friend the can opener really are. The canning industry is a large industry with many problems. Suitable synthetic organic detergents have helped to solve some of these problems. The peeling of fruit and vegetables prior to canning is a costly operation from the labor standpoint. For this reason chemical peeling has achieved more importance recently. The peeling of fruit and vegetables with caustic soda is fairly old, but only recently has it been found that by using suitable alkali stable wetting agents in conjunction with caustic soda, time savings of 10-60% can be effected depending on the type of fruit or vegetable under consideration. In some instances, it appears advisable to combine chemical peeling with mechanical peeling to achieve the greatest speed.

Fruits and vegetables in their native habitat are fair game for many kinds of insects and bacteria. These pests and the chemical sprays used to control them must be removed or destroyed before the food is considered to be in edible condition. Here again tasteless or free rinsing synthetic organic detergents serve a useful purpose in the washing of these fruits and vegetables in early processing stages. It also helps to maintain conveyor belts in a sanitary condition and is valuable for the cleaning of processing kettles. Its preservative action may also be of interest for the storage of certain types of foods as illustrated in Figure IV.

*Brewing and Distilling Industries*

When a speaker mentions something that is of benefit to the brewing and distilling industries, he immediately arouses mixed emotions in his audience. Nevertheless, it should be pointed out that the cleaning and sterilizing of bottles can be conducted more rapidly and more effectively in the presence of carefully selected synthetic organic detergents than when alkalis are used by themselves. This is illustrated in Figure V.

In hard water areas it also helps to prevent the deposition of unsightly lime scale deposits on the bottle washing machines and allows them to operate more efficiently both with respect to their cleaning action and their power consumption. Beer glasses may be washed with many of these products without affecting the head on the beer. This is illustrated in Figures VI, VII, and VIII.

**RESISTANCE OF PENICILLIUM GLAUCUM TO 2% CAUSTIC SODA (Na OH) IN THE PRESENCE OF ALKYL-ARYL-SULPHONATE AT 95° F.**

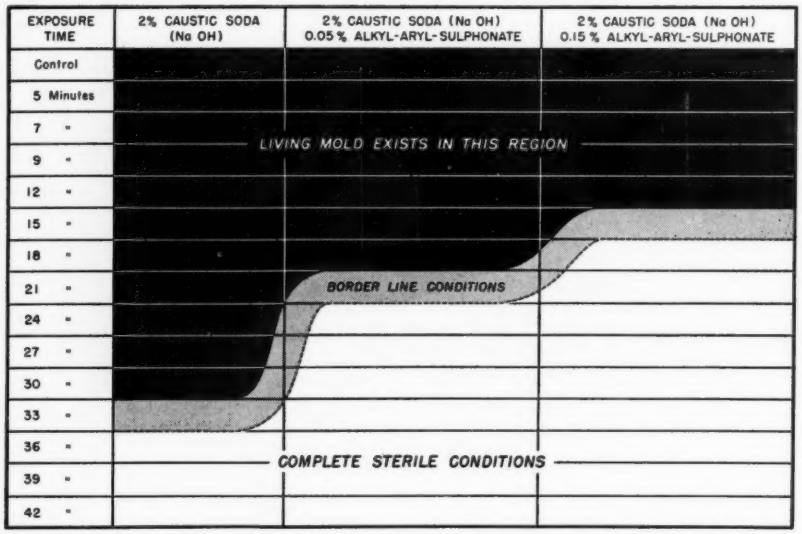


*Figure V—Fungicidal Properties of "Nacconol" NR.*

***When beer bottles are washed with caustic soda the time required to kill the mold organism* penicillium glaucum *is greatly reduced in the presence of a suitable synthetic organic detergent. The temperature of 95° F, and the caustic soda concentration (2%) are lower than those specified in bottle shop practice and serve to show that effective killing of the mold may be accomplished under these difficult conditions.***

*Figure IV—Mold Inhibition with "Nacconol" FSNO.*

***Portions of stewed tomatoes were exposed to the atmosphere and then held in petri dishes for several days with the result shown. It will be noted that "Nacconol" FSNO in concentrations higher than 0.05% definitely inhibits mold growth.***

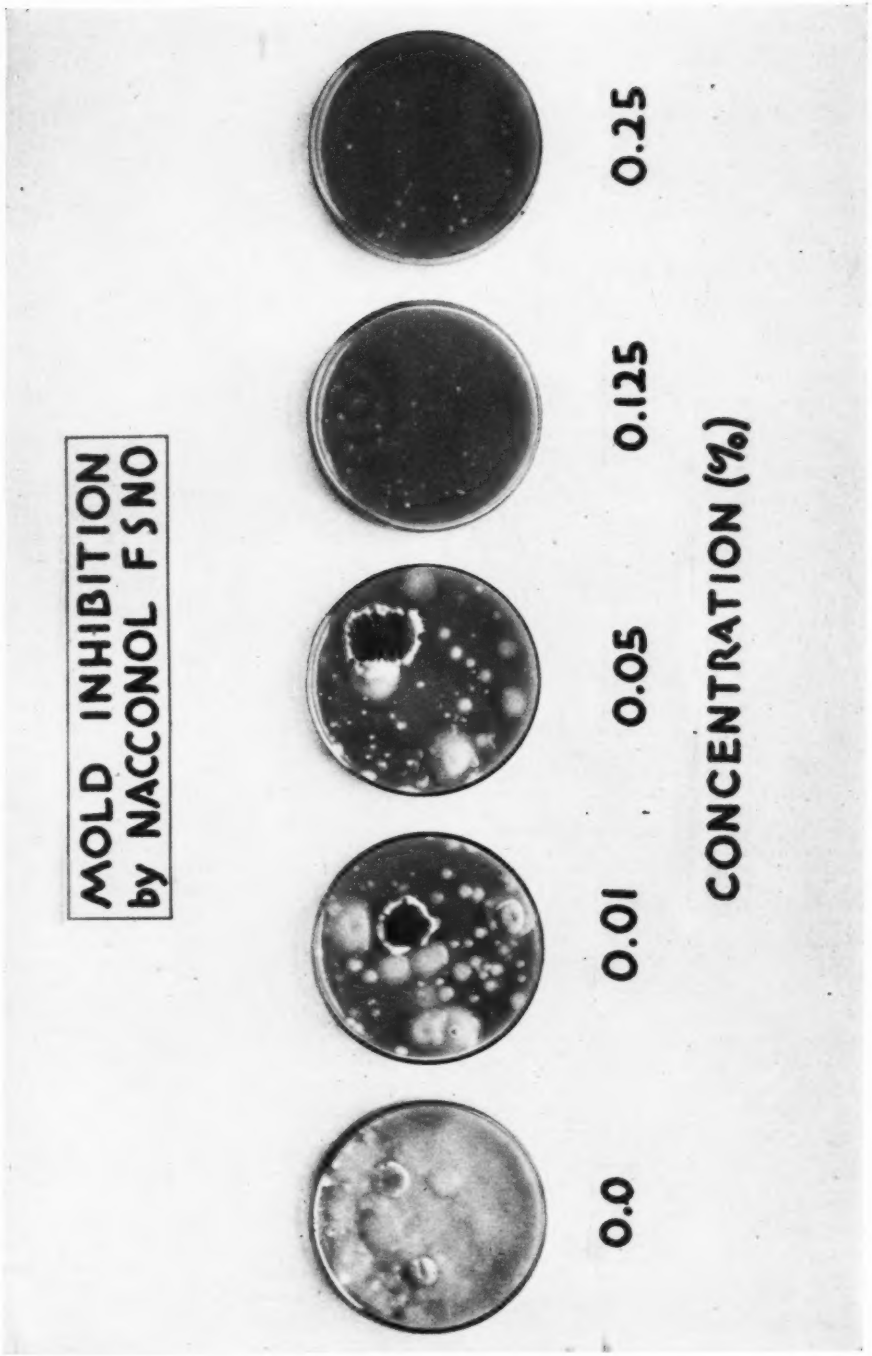
MOLD INHIBITION
by NACCONOL FSNO
0.0
0.01
0.05
0.125
0.25
CONCENTRATION (%)

Fig. IV.

*Figure*

*This ph*
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*Miscellane*

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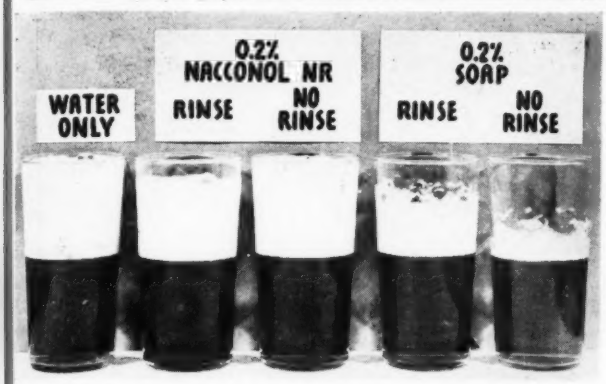


*Figure VI—Beer Glasses Washed by Different Methods (1)*

*This photograph shows freshly poured beer in glasses washed by different methods. Slight soap residues on the glass serve to collapse the "head" on the beer very rapidly. Glasses washed with "Nacconol" NR, with or without rinsing, produce a much greater head of foam.*

*Figure VII—Beer Glasses Washed by Different Methods (2)*

*These are the same glasses of beer shown in Figure VI after standing for two minutes. The "Head" on the "Nacconol" washed glasses is just as persistent as on the glass washed with water alone.*

*Miscellaneous Industrial Applications*

Many miscellaneous industrial applications of the synthetic organic detergents exist, some of which are rather highly developed and others which are still in the experimental stage.

Probably only a few of us realize that the concrete highways over which we ride may contain small amounts of surface active agents embodied in the concrete. These highways are required to stand all local weather changes which may embrace extreme heat in the summer and extreme cold in the winter. If the concrete is not properly compounded, it will scale as a result of numerous cycles of freezing and thawing. However, additions of very low concentrations of these products to the concrete at the time of mixing alters its physical characteristics to such an extent that this scaling is eliminated. This extends the period of useful life of the road and greatly reduces maintenance costs.

*Figure VIII—Beer Glasses Washed by Different Methods (3).*
*These are the same glasses of beer shown in Figures VI and VII after standing for five minutes.*

*It will be noted that the "head" on the soap washed glasses has practically disappeared. The "head" on the rinsed "Nacconol" NR glass is essentially the same as that on the water washed glass. The "head" on the "Nacconol" NR glass that was not rinsed is the most vigorous of the group.*

A friend of ours who is a chemist relates an interesting personal experience which involved a rather unusual application of a surface active agent. He and his young grandson went swimming and the boy got water in one of his ears. In a short time this became very painful and it appeared as if the swimming party would have to be cut short. Our friend, being very resourceful, remembered that he had some synthetic organic detergent in his automobile which he generally used for washing his car. He made a solution of this material in a paper cup and poured a little of it into his grandson's ear with the hope that by reducing the surface tension of the water it would drain away more readily from the waxy surface of the ear canal. He then had him lie on that ear and in less than a minute all the water drained out, the pain was relieved and the swimming party was resumed.

This might be considered as an insignificant application but many other drainage problems of much greater magnitude exist where the synthetic organic detergents play a similar role. A good example is the dewatering of coal. A large percentage of the coal after mining is wet processed to remove the slate prior to shipment. Since freight rates apply to anything that is in the coal car the shipping of retained water is expensive. Freezing of the coal in the cars during the winter months is also very bothersome. If the coal is sprayed with a synthetic organic detergent solution just as it emerges from wet processing, drainage rates are increased and the surface moisture on the coal is drastically reduced. The principle involved here is the same as that described in the drainage of water from the human ear.

## Public Applications

Up to this point we have dealt only with the industrial applications of synthetic organic detergents which, in general, take place within the confines of factories. There are, however, many public applications which have to do with our downtown sections, our homes, our farms and our Armed Forces either at home or abroad.

In our downtown sections the housekeeping in and around our hotels and office buildings can be greatly facilitated

by the use of the new cleaning agents. In many Government office buildings nothing but this type of material is used for the cleaning of floors and walls. It is economical, effective and non-damaging to the surfaces being cleaned. Buses and street cars can be thoroughly cleaned as can also passenger and freight trains.

One of our most interesting demonstrations involved the washing of city streets with a dilute synthetic organic detergent solution dispensed from a power flusher. The nozzle pressure in these flushers is 60 to 80 pounds per square inch and when the detergent solution hits the street, and splashes up against the curb a noticeable quantity of suds is formed. This demonstration took place in a tenement district where many small children were playing on the sidewalks. They were immediately attracted by the suds and proceeded to gather up great handfuls of it. In a very short time several anxious mothers appeared on the scene and inquired regarding the material being used to wash the street, while grasping their children firmly to keep them out of harms way. On learning that the material was harmless they shoved the children back into the street and told them to go ahead and get cleaned up! During this demonstration it was interesting to note the globules of oil which had been removed from the street floating along in the gutter. It is almost impossible to skid an automobile on a wet street that has just been washed in this manner. This is in contradistinction to what happens on a water washed street which is extremely hazardous.

*Household Tasks*

An old adage states that "A woman's work is never done", but we hasten to add that it can be done much better and with less physical effort through the use of the modern cleansing agents. Dishwashing is an excellent example. Since no sticky lime curds are formed in the dishpan the dishes may be rinsed and allowed to drain dry without towelling. Many women suffer from dermatitis which is often traced to the use of household soaps. Practically all of these cases can be cured if the patient changes from soap to a suitable synthetic organic detergent for her daily household washing tasks. Interesting information on this subject has been published in the Journal of the American Medical Association and many cases exist where these products are required by doctor's prescription.

We had an interesting complaint from a woman who was allergic to soap and whose doctor had prescribed synthetic organic detergents for her general household cleaning tasks. She was very pleased with the personal comfort which she derived from the use of this material but complained that she did not like the appearance of the black solution. This was a little puzzling but investigation revealed that she was using a dark grey enamel dishpan and a galvanized bucket. She had never seen the bottom of this pan or bucket before. They had always been obscured by the turbid soap solutions prepared in hard water!

Pediatricians also prescribe selected synthetic organic detergents for the washing of baby clothes. The infant ailment commonly dubbed "diaper rash" has been traced in many cases to hard water soap residues which have not been rinsed out of the fabrics. When these garments are washed by the new method the diaper rash usually disappears.

Synthetic organic detergents are capable of performing many other household tasks. These include the washing of floors and walls, the removal of wall paper without scraping and the washing of pets. Its insect repellent action is of distinct advantage. A cockroach will not reside in an area that has been cleaned with certain of these products as illustrated in Figure IX. This picture shows a large white enamel tray the right hand portion of which was washed with a 0.25% solution of a suitable synthetic organic detergent. The left hand portion of this tray was washed with a 0.25% soap solution. Washing was accomplished by sponging the tray with a cloth squeezed out of the respective solutions and then rinsed by wiping with a cloth squeezed out of fresh water. The edges of the tray were greased to prevent escape of the insects and a colony of healthy cockroaches was introduced into the tray. The tray was placed in a dark room with a camera and flash light attachment mounted over it. The cockroaches were allowed one hour to come to rest, at which time a flash light picture was taken. The insect repellent action of the synthetic organic detergent is well demonstrated.

## Personal Uses

Personal cleanliness is held in very high regard by our nation and of this we are extremely proud. Synthetic organic detergents have made themselves felt in this field through their use in dentifrices, shampoos, gargles and mouth washes. Bubble baths came in as interesting novelties and have been retained by public demand. Bubbles in the bathtub are interesting it is true, but the disappearance of the ring around the tub is of even greater interest, particularly to the person who has to scour the bathtub. Special synthetic organic detergent products, prepared in cake form are prescribed by physicians for toilet purposes by patients who are allergic to even mild types of soap. It is highly possible that the use of these new toilet materials will become more widespread with time.

*Figure IX—Insect Repellent Action of "Nacconol" NR.*

*A cockroach will not reside in an area that has been cleaned with certain synthetic organic detergents.*

—♦ ♦—

## Philadelphia Section to Meet at Kugler's Restaurant

THE Philadelphia Section has announced that the following meetings will be held at Kugler's Chestnut Street Restaurant, Widener Building, Chestnut Street near Broad, Philadelphia:

January 9, 1948; February 27, 1948; April 9, 1948; May 14, 1948.

●

## CALENDAR

**PHILADELPHIA SECTION**
Meetings: November 8 (Silver Anniversary Meeting, Bellevue-Stratford Hotel, Philadelphia); January 9, 1948, February 27, April 9, May 14 (Kugler's, Philadelphia).

**RHODE ISLAND SECTION**
Meeting: October 31 (Providence Engineering Society Hall).

**NORTHERN NEW ENGLAND SECTION**
Meeting: November 21.

**NEW YORK SECTION**
Meeting: December 5 (Swiss Chalet, Rochelle Park, N. J.).

**NATIONAL CONVENTION**
October 23, 24, 25 (Congress Hotel, Chicago).

**SOUTHEASTERN SECTION**
Meeting: December 6 (Atlanta, Ga.).

●

## Membership Applications

### *CORPORATE*

Refined Products Corp., Lyndhurst, N. J.

### *SENIOR*

*Edgar A. Aberman*—Co-owner of Textile Printing Plant, Texi-Craft Co., Chicago, Ill. Sponsors: H. V. Petelle, S. Y. Stribling.

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A special invitation had been sent to all living past-chairmen to attend this meeting and, with three exceptions, they were present. In the order in which they held office, the following were in attendance: P. J. Wood, Herbert Grandage, Daniel P. Knowland, Robert Gaede, Henry Herrmann, Ephraim Freedman, George L. Baxter, Louis Zisman, J. Ernest Meili, P. J. Kennedy and Emmett Driscoll. Letters of regret at being unable to attend were received from E. H. Killheffer, Samuel L. Hayes and H. R. Tisdale. Two past chairmen have died since the formation of the section: Ed. F. L. Lotte and P. F. Kingsbury. Three past chairmen have attained the office of president of the national association: P. J. Wood, E. H. Killheffer and Henry Herrmann.

Henry F. Herrmann, National President, spoke briefly on some incidents in the early days of the Section and urged attendance at the National Convention to be held in Chicago.

P. J. Wood reviewed briefly some of the high spots in the history of the Section and referred to the exceptional growth in membership.

Dr. Herman E. Hager, Chairman, referred to the program which had been arranged for the National Convention and also urged attendance. He pointed out that the Philadelphia Section would celebrate its twenty-fifth anniversary at a dinner-dance to be held on November 8th at the Bellevue Stratford Hotel.

The speaker of the evening was Lew Hahn, President of the National Retail Dry Goods Association, who spoke on "Past and Future in Textiles from the Consumers' Point of View". His address was very well received and he made special comments on the existing price structure.

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Respectfully submitted,
Norman A. Johnson, *Secretary*.

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Howard Lanin and his orchestra, well-known in Philadelphia social circles, has been booked for the dinner-dance. Reservations may be made through the secretary, A. E. Raimo, John Campbell & Co., Broad and Spring Garden Streets, Philadelphia 23, Pa.

Out of town members and guests may secure hotel reservations through W. G. Hamlen, Jr., E. I. duPont de Nemours & Co., Inc., 1616 Walnut Street, Philadelphia 3, Pa.

With over 200 advance reservations now received the evening promises to be one well attended as well as enjoyable.

LOUIS A. OLNEY, Sc.D.
*Directing Editor*

AMERICAN
# DYESTUFF REPORTER

NORMAN A. JOHNSON, B.T.C.
*Managing Editor*

OCTOBER 20, 1947

## The Chicago Convention

WHEN many of you read this you will have gathered in Chicago to attend the National Convention of the American Association of Textile Chemists and Colorists.

An extremely attractive schedule of events has been arranged with a technical program that offers everyone, no matter what his interests, something of value. The National Convention further offers us an opportunity to strengthen the bonds of our Association by meeting one another on mutual grounds. It is an opportunity to get to know your officers and the members of other sections; it is an opportunity to keep abreast of new developments that affect your profession.

In the program that has been arranged, no effort has been spared to provide everything of the best. *What YOU get out of the Convention is up to you!*

## Show Me Any Other Country*

### BETTY KNOWLES HUNT

*Note: We believe this is one of the most enlightening and easy to understand statements on this subject that has been published in a long while and we are sure that you will find it of interest and value—Editor.*

### Look Behind the Label

AMERICANS, in general, regard socialism as something alien and unrelated to America, and would never consider joining the socialist party. Yet, they clamor loudly for every piece of socialistic legislation which is offered—so long as it is sugar-coated with an American label.

It must be very disheartening for sincere socialists to note the continuing impotence of their party, while, at the same time, a pseudo-socialism in free-enterprise wrappings has been able to command such a tremendous following from the rank and file. This is a sad commentary on the political and economic ignorance of the American masses. They dismiss socialism with a wave of the hand, and then line up in droves behind social security, socialized industry, medicine, housing and education. They denounce socialism, and yet innocently and ignorantly spout its doctrines day in and day out. Nothing more constructive could happen to the American public than to have it understand socialism clearly, be able to identify its doctrines beneath all their various disguises, and then either to endorse or repudiate its principles—openly and honestly.

I have done my own personal job of study, analysis and evaluation of socialism—I take my stand in its opposition, and would like to present some of my reasons for so doing.

There is no question but that socialistic proposals seem logical, just and humanitarian. They sound like the idealistic answer to a muddled world's prayer. In one breath, they denounce the slavery of totalitarianism and the "crazy quilt of capitalism," and offer a Utopian "middle way" which eliminates the liabilities and retains the assets of both collectivism and individualism. They mix the oil of one with the water of the other and present their mixed formula of perfection. It is all very intoxicating and consoling—until one realizes that oil and water will not mix! At that point, it becomes necessary to say to you, Mr. Socialist: "Show me!"

### Utopia—On Paper

YOU say, "we socialists offer logical reasons why we shall have more freedom, and certainly a surer victory over poverty on the basis of public ownership of things necessary to the common life and their democratic control under democratically controlled planning." This is a lovely blueprint, but show me a concrete example of where this has taken place. Show me a spot on God's green earth where socialism has increased individual freedom and eliminated poverty. Show me where it has not meant "rigorous and arbitrary regulation," and where it has increased "private initiative and consumer's choice." Show me where it has proved "the road of escape to true freedom as well as to peace and plenty." Show me this Utopia,—not on paper, but in reality!

You admit, in your writings, that socialism in Germany, Italy and Russia resulted in naziism, fascism and communism, but you say these were perversions of true socialism—and you abhor them. That's fine, I do too. But show me where socialism has avoided these pitfalls and led to freedom and prosperity for everyone, as your blueprint says it will.

### The Cure That Kills

YOU point out and underscore many of the errors of American capitalism, and I heartily concur in them all, but your solution and mine are at opposite ends of the pole. I am more afraid of your cure—than I am of our present ailments. You point to the evil of private monopoly, and then you propose to cure this evil by a bigger and more powerful state monopoly. I find this very inconsistent. If monopolies are destructive of freedom, and I believe with you that they are,—then the answer ought to be to curtail or prevent monopolies,—not to substitute one for the other.

The only cure for monopolies is freer and wider-spread com-

* This was originally published in the Bridgeport, Connecticut, "Post" of February 25, 1947, as an answer to a statement made by a leading American socialist. With minor revisions it was published as a booklet and distributed by the Foundation for Economic Education.

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## Show Me Any Other Country*

### BETTY KNOWLES HUNT

*Note: We believe this is one of the most enlightening and easy to understand statements on this subject that has been published in a long while and we are sure that you will find it of interest and value—Editor.*

### Look Behind the Label

AMERICANS, in general, regard socialism as something alien and unrelated to America, and would never consider joining the socialist party. Yet, they clamor loudly for every piece of socialistic legislation which is offered—so long as it is sugar-coated with an American label.

It must be very disheartening for sincere socialists to note the continuing impotence of their party, while, at the same time, a pseudo-socialism in free-enterprise wrappings has been able to command such a tremendous following from the rank and file. This is a sad commentary on the political and economic ignorance of the American masses. They dismiss socialism with a wave of the hand, and then line up in droves behind social security, socialized industry, medicine, housing and education. They denounce socialism, and yet innocently and ignorantly spout its doctrines day in and day out. Nothing more constructive could happen to the American public than to have it understand socialism clearly, be able to identify its doctrines beneath all their various disguises, and then either to endorse or repudiate its principles—openly and honestly.

I have done my own personal job of study, analysis and evaluation of socialism—I take my stand in its opposition, and would like to present some of my reasons for so doing.

There is no question but that socialistic proposals seem logical, just and humanitarian. They sound like the idealistic answer to a muddled world's prayer. In one breath, they denounce the slavery of totalitarianism and the "crazy quilt of capitalism," and offer a Utopian "middle way" which eliminates the liabilities and retains the assets of both collectivism and individualism. They mix the oil of one with the water of the other and present their mixed formula of perfection. It is all very intoxicating and consoling—until one realizes that oil and water will not mix! At that point, it becomes necessary to say to you, Mr. Socialist: "Show me!"

### Utopia—On Paper

YOU say, "we socialists offer logical reasons why we shall have more freedom, and certainly a surer victory over poverty on the basis of public ownership of things necessary to the common life and their democratic control under democratically controlled planning." This is a lovely blueprint, but show me a concrete example of where this has taken place. Show me a spot on God's green earth where socialism has increased individual freedom and eliminated poverty. Show me where it has not meant "rigorous and arbitrary regulation," and where it has increased "private initiative and consumer's choice." Show me where it has proved "the road of escape to true freedom as well as to peace and plenty." Show me this Utopia,—not on paper, but in reality!

You admit, in your writings, that socialism in Germany, Italy and Russia resulted in naziism, fascism and communism, but you say these were perversions of true socialism—and you abhor them. That's fine, I do too. But show me where socialism has avoided these pitfalls and led to freedom and prosperity for everyone, as your blueprint says it will.

### The Cure That Kills

YOU point out and underscore many of the errors of American capitalism, and I heartily concur in them all, but your solution and mine are at opposite ends of the pole. I am more afraid of your cure—than I am of our present ailments. You point to the evil of private monopoly, and then you propose to cure this evil by a bigger and more powerful state monopoly. I find this very inconsistent. If monopolies are destructive of freedom, and I believe with you that they are,—then the answer ought to be to curtail or prevent monopolies,—not to substitute one for the other.

The only cure for monopolies is freer and wider-spread com-

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petition in an economic system which insists that this door of private competition stay open. When you write in one of your pamphlets: "There wasn't much freedom when the 200 largest corporations controlled more than 50 per cent of the business wealth of America,"—I have to smile at your concern, despite the fact that I would prefer to see fewer "big businesses" and more "middle-sized" businesses. Two hundred businesses with only 50 per cent of our business wealth still is a far cry from monopoly, and not half so glaring a danger as a completely concentrated monopoly such as John L. Lewis enjoys in the coal mines. You say nothing at all about this, and ignore the most stifling monopoly in the world—socialized Russia—where everything is owned by the state, and everyone is compelled to belong to one huge closed shop, and to work wherever and for whatever the state decrees.

You admire the British experiment in socialism, but you do not say how socialism is to solve Britain's problems. The key to her post-war struggle still is production, and yet you fail to show socialism's incentive to more production. The weary miners want shorter hours and higher pay. The trade unions of England have geared their output to accommodate their weakest member. How can debt-burdened Britain pay more money for less work—when what she needs is more work for less money? And how can she keep her labor government in power, except by force or by acceding to the unanswerable demands of the workers who are the bulwark of her support. Poor Britain is damned if she does and damned if she doesn't. So is France. So is Italy. So is Russia—and all of Europe. We may have our troubles here in America, but the socialized world is 100 per cent worse off than we are. It is also noteworthy that in the two least-socialized European nations, Holland and Belgium—recovery has been most rapid!

What makes you believe that men who are supposed to "manage" in the public interest will be any less subject to the love of power or the human evils of greed and corruption than those who "manage" privately. They are the same people, and they possess the same shortcomings. Also, the incentive to good judgment is stronger with private managers who must assume the financial loss for their mistakes, while the government managers can call upon the federal treasury to subsidize their incompetence.

We have the freest, most democratically-controlled government on earth, and yet in the past score of years we have had very little to say about the edicts which have poured forth from government agencies and their appointed directors. Power is intoxicating to all. It feeds upon itself. We the people gain nothing by substituting new people for old in Washington. Our only hope is to take away the power that has been concentrated there, so that no one can use it benevolently or otherwise. Once we allow ourselves to become the subjects of benevolent power,—we shall soon find ourselves the slaves of a very unbenevolent power.

## Natural Bedfellows

YOU explain the coalitions of socialism with communism in Europe as "a grim necessity at a critical moment," but this is not the whole answer. You neglect to point out what a broad base of common ground exists between the two parties. Both believe in public ownership instead of private ownership, and both are buddies in their hatred of capitalism, free-enterprise, and the profit motive. You differ only in degree and in means, but socialism is closer to communism than it is to capitalism, and when that "critical moment" comes, you will sacrifice your belief in "freedom" before you will relinquish your collectivized program for "security."

Here lies the greatest danger of socialism. Actually, it is the economic philosophy of communism. Those of us who repudiate it do so for two very definite reasons.

First—we believe that economic and political philosophies go hand in hand and are inseparable. We believe it is no accident that "free enterprise" developed along with a free republic, and that it is equally no accident that where a collectivized economy was installed, individual freedom was sacrificed. In the same way, those countries which have tried a hybrid system, half-collectivized and half-free, have in the same proportion increased regimentation, decreased individual initiative and choice, and are in constant danger of swinging further to the left.

Second—despite your emphasis on increased production and plenty via socialism, we can find no examples of such results in proof. Show me a socialized or even a half-socialized country which has remotely approached our free-enterprise record of production and plenty. Show me a socialized or half-socialized country which has produced a higher standard of living for workers than capitalistic America. Show me where socialism has produced cheaper cars, telephones, radios, movies, gadgets or comforts, and where they have been wider distributed among the average people—than here in America. Show me any other country where people own as many homes, or can match our 75 million life insurance policy holders, or our 50 million bank accounts, or our 80 million bondholders. If you know a better, happier, more envied workers' Republic than we have right here in America—where is it?

Don't tell me that this difference is merely because America has large natural resources! India, China and Russia also have great natural resources. Somebody once said, "Only Americans find oil." Why? Don't tell me that our miraculous output of inventions and creations is due to our "natural inventiveness." We are nothing more than a conglomeration of all other peoples. Our Steinmetzes, Pupins, Einsteins and others came to our shores as penniless refugees, and brought their genius with them. Why have we had to erect barriers against those who would come in droves to this land of freedom and opportunity? Why have the socialist countries had to erect barriers to keep their own people at home? Name me some of the major inventions produced under socialism in order to prove that individual incentive still exists there. I do not know of them.

Socialists and communists make the same fatal mistake. They place security ahead of freedom. America is the prime example of a nation which founded itself on the basic principle of individual freedom. Its Constitution bristles with limitations upon the government,—and the result has been a greater measure of security for Americans than for all other nations. America offered unlimited rewards for initiative, enterprise and wisdom,—and she guaranteed no subsidy for laziness, incompetence or failure. Thus she used the carrot and stick method of driving individuals to create, produce and succeed. This free way of life is a rugged, painful business at times, but it has paid the biggest dividends on earth and it has been worth every weary mile of it.

Freedom appeals to man's strength; socialism and communism appeal to man's weakness. Freedom teaches a man to stand independently on his own feet; the others teach him to lose himself in the protective herd. Freedom places its emphasis on man himself; and others lose man in their emphasis on mankind.

## "Conform or be Liquidated"

ONE of the pleasant-sounding doctrines of socialism and communism is "economic and social planning instead of individual anarchy." But you neglect to mention that for a "plan" to succeed, we must all be fitted into it—whether we like it or not. You would like us to accept the "plan" voluntarily, but if we do not, you fail to explain that we must then be compelled to do so. This is where communists defeat socialists. They have no compunctions about using force to further their ends. Conform or be liquidated is their motto. The end justifies the means. Socialists are more squeamish, and that is why the communists will always supplant them when the "emergency" comes along.

In free America, we have recently had an inkling of what this could mean. Under OPA planning of our whole industrial and economic life, when the cattle raisers balked at selling their

*(Concluded on Page 615)*

## *To Manufacturers of Dyestuffs, Textile Chemicals, Wet Processing Machinery and Laboratory Equipment:—*

The TWELFTH ANNUAL PROCESSING REVIEW NUMBER will appear on December 1st, 1947.

One of the special features of past issues, which will be continued this year, is a listing of new products for the textile wet processing field. You are invited to submit information concerning such products which have been brought out since November, 1946. This information should include the trade name of the product and a BRIEF summary of its uses. Please list each product on a separate sheet. If illustrations are necessary, glossy photographs or India ink drawings should be furnished. If the trade name is registered or the product is patented and you wish this fact indicated, please advise.

In order to insure your product being listed in our issue of December 1st, information concerning it should be in our hands NO LATER THAN NOVEMBER 3rd.

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***The response from manufacturers in the past ten years has provided the basis for one of the most valuable features of the issues and we trust that you will again cooperate to the fullest extent.***

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# • PATENT DIGEST •

## Waterproofing Textiles — Latex modified with pectin solutions G, 2, 02

U. S. Pat. 2,421,108 (California Fruit Growers Exchange—Wilson—May 27, 1947).

Latex, obtained from the high concentrates of natural rubber dispersions have often been proposed for finishing textiles and leather goods. The latex prepared in the plantations has a rubber content from 32-36%. In many cases there is scome need of increasing the viscosity of these dispersions raising thereby the rubber content. For coating purposes in general and for textile finishes in particular it was suggested to use one of the common thickening agents such as polysaccharides (starch), colloidal clays and the like. The present specification is aware that pectin also has been mentioned in this connection; but the invention comprises *the use of processed pectin* which is most efficacious in combinations with latex concentrates. By adding this special pectin modification the latex acquires a *thixotropic* character, i.e. the dispersion remains fluid as long as it is agitated while it will set again to a gel when the agitation ceases. This effect is brought about by mixing dry pectin first with calcium acetate (3 lbs. pectin to 1 lb. calcium acetate + 2 $H_2O$) and stirring this mixture in (12.5 gallons) water. By adding this composition to the alkaline latex concentrate a stiff paste will result which has the "thixotropic" properties as mentioned above. By reaction within the body of the latex dispersion, occurring between the alkali hydrolized pectin and the alkaline earth salt the gelatinous precipitate is formed. An application of this process to water repellent coating operations is quite possible. Of course it cannot be expected that a quick setting gel of this kind would penetrate deeply into the fiber but the method might be very useful in cases where a non-porous, water-tight coating of textiles is required.

*References cited by the Patent Office are amongs others:*

Re 21,077 (same company) describing the production of fibrous alkaline pectates by dispersing the (citrous-) pulp with alkalies.

U. S. P. 2,132,064 (same company) protecting a process for treating latex with the kind of alkali-treated pectins, mentioned above.

*Ind and Eng. Chem.* 1941 p. 287 (Wilson of the same company): explaining the difference between pectates and "protopectates", i.e. the material obtained in an earlier stage of the plant growth. The

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alkali compounds of both these groups have different properties, the protopectates giving more viscous solutions; they are transformed into the less viscous type by an acid treatment. These transformed pectates are used in the present process. Further Reference: U. S. Pat. 2,392,854 (Mutual Citrus Prod.): pectin substance as thickener for printing textiles. See also the abstract to U. S. Pat. 2,412,282 (Essent. Oil) in AMERICAN DYESTUFF REPORTER 1947, p. 337.

## Vat Dyes Printing—Alkyl carbamates added D, 2, 01

U. S. Pat. 2,421,622 (Am. Cyanamid Co.—Kienle, Amick—June 3, 1947).

Vat printing pastes contain quite generally auxiliary agents which can either be added to the filter press cake during the manufacture of the dyestuff or later on immediately be dispersed within the ready made printing paste. According to the present invention a better dispersion of the dyestuff can be expected by blending the agent already with the dyestuff during the manufacture. Many groups of auxiliaries used in vat printing are enumerated: for preparing pastes triethanolamine, glycerine and similar hygroscopic liquids have been proposed for obtaining dry well dispersible dyestuff powders. Reference is made to alkylolamine hydrochlorides, to "silver salt" (sodium anthraquinone sulfonate) or anthraquinone itself. It is claimed that most of these additive substances did not give even prints, at least not for different dyestuff types. It has been observed that solid alkyl carbamates (urethanes) obtained by heating urea and a lower aliphatic alcohol have various advantages over known vat print auxiliaries. They disperse, although being dry solids, quite well in printing pastes and they combine also very satisfactorily with dry dyestuff powders. Moreover they act as stabilizers for printing pastes and another most remarkable property is certainly that they produce good color yields even under hot ageing conditions (overheated steam) so that the development is facilitated and the results become more secure. The examples describe blends of these carbamates with Vat Scarlet 2 GHN (a mixture of Hydron Orange and Hydron Pink), Vat Golden Orange, Vat Dark Blue GO, etc. Particularly recommendable products are Butyl carbamate: $C_4H_9$-O-CO-$NH_2$ or the corresponding octyl or ethyl butyl compounds.

*References cited by the Patent Office are amongst others:*

U. S. Pat. 2,143,490 (Gen. Aniline Works): describing decomposition products of proteins combined with higher fatty acids and the like, (thus products of the "Lamepon"-type).

U. S. Pat. 2,184,495 (Ciba-Graenacher): thioglycollic acid amides added to vat prints.

U. S. Pat. 2,117,623 (Gen. Aniline Works): condensates of urea and alkylene oxide used as auxiliaries in vat printing.

Further Reference: U. S. Pat. 1,856,434 (Gen. Aniline—Schmidt): relating to condensates from urea and an aliphatic alcohol or ketone (examples urea + butylene glycol) used for pasting vat dyestuffs.

## Sizing with Polyvinylalcohol, modified with Bariumchloride A, 4, 01

U. S. Pat. 2,421,122 (du Pont—Haefele—May 27, 1947).

Water insensitive yarns, probably those of the nylon type, have their special sizing problems. The examples contained in this specification relate to hexamethylene-adipamide (thus nylon) yarns. They are treated with a solution of "hydroxylated polyvinl resins" defined as water sensitive polyvinyl compounds in which 1-50% of the carbon atoms in the polyvinyl chain are attached to hydroxy groups. A typical example for this kind of substance is polyvinyl alcohol, termed here as partly saponified polyvinyl acetate. By sizing yarns with this water soluble substance the size becomes gummy when the yarns are run through a humid atmosphere. Since the polyvinyl alcohols are otherwise very well suited for sizing purposes it is only necessary to reduce the excessive water sensitivity. That has been done by adding some boric acid to the composition. In consequence of a temporary shortage of boric acid this known treatment has now (according to the present invention) been substituted by a treatment with barium chloride whereby the water sensitivity can likewise be controlled.

*References cited by the Patent Office are:*

U. S. Pat. 2,300,074 (du Pont): relating to the treatment with boric acid, mentioned above. U. S. P. 2,246,915 (Resistoflex Corp.): polyvinyl alcohols, plasticized with sodium bromide or other halogen

salts. To compare with abstract to Brit. P. 582,641 in AMERICAN DYESTUFF REPORTER, July 14, 1947, p. 395.

### Shrinkproofing Wool—Permanganate Treatment A, 2, 04

Brit. P. 586,020 (Wolsey Ltd. and P. Alexander)—according to the "Dyer" of May 23, 1947, p. 517.

Treatments for controlling shrinking and felting woolen goods are very often carried out by oxidation, especially by a chlorine treatment. It is claimed in the present patent that less chemical and physical damage is done to the goods by a treatment with about (2%) aqueous solution of sodium or potassium permanganate. The pH value of the baths is not more than 2.0 and the time of immersion does not exceed a few minutes, being just long enough for a good penetration of the goods. After the permanganate treatment, the brown discoloration due to the formation of $MnO_2$, has to be removed as usual by an acidified solution of sulfite or by a hydrogen peroxide solution.

*References:* Shrinkproofing treatments with other oxidizing agents than halogens, especially with peroxide are described in Brit. P. 579,584 and 553,923 (Bleacher's Association). U. S. Pat. 2,351,718 (Speakman): discloses a method for shrinkproofing wool fabrics by sulfite treatment, followed by reacting the modified wool fibers with peroxide.

### Flameproofing—Dicyandiamide Formaldehyde-Resins G, 2, 03

Brit. P. 586,095 (Bowen, Majerus, Meals, Kellett) according to the "Dyer" May 23, 1947, p. 517.

Resins produced from dicyandiamide and formaldehyde in the presence of large amounts of ammonium phosphate have already been recommended as flameproofing agents. The present method differs from these known processes by the step of precipitating the condensate on the fiber after a previous impregnation with a mixture of the components mentioned above. This alkaline treatment has the advantage of neutralizing any acidity contained in the impregnating composition and to precipitate at the same time the insoluble precondensate. According to an example 146 p. dicyandiamide, 420 p. by weight of 40% formaldehyde, neutralized before use, and 182 p. monoammonium phosphate are warmed together at temperatures below 60° C. A syrup results, used for the padding operation of the fabric. The materials are squeezed and passed through n/2 NaOH *without an intermediate drying*, thereupon dried and baked at 150° C. This process can be combined with the "Zelan" ("Velan") process.

*Reference:* U. S. Pat. 2,411,396 (Am. Cyanamid): protects the use of cyanamide-formaldehyde condensates as flameproofing agents; the conditions are: low temperatures (45° C.) and a pH of 9.5 during the impregnation and a precipitation of the condensate with acids.

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produce without a normal profit, our President stated in a nationwide address that he had actually considered government seizure of all the cattle. Shades of Russia! It does not require much imagination to picture the result of such a plan. Cattle raisers would have rebelled. Force would have been used. Fines, imprisonment and death would have followed. Is this so different from Russia's collectivization of her farms, ner ruthless "elimination" of rebels, and the subsequent starvation of five million of her farm families? But the communists will argue that the plan was for the benefit of all, and that individuals do not count when society is expected to gain. Nonsense! How can you possibly increase the security of society by destroying the security of its individuals?

Advocates of planning as a stabilizer always forget that planners also must be human, and subject to all the shortcomings and mistakes of other human beings. Even the most rabid endorsers of OPA admit that individual injustices were numerous and unavoidable, yet these individuals were expected to submit and be sacrificed in the interests of the over-all plan.

Today, even veterans who own occupied houses are often denied the right to evict the tenants even though they themselves have no place to live. And government-subsidized potatoes are rotting in the fields by the ton. The planning advocates say "but this is because we did not control the production." And so it goes. After you control production, then you must control distribution, and back we go to rationing, price-fixing, wage-fixing—and the whole involved, impossible mess. I do not blame the planners. They could be the wisest and best-intentioned persons in the world. I blame the whole idea, because it is impossible, impractical, and incapable of justice, and because the taxpayers foot the bill for every inevitable mistake.

There is not a single socialist or communist doctrine that does not sound good, but which is not equally fatal. "Production for use and not for profit." You do not say "who" is to decide what is for use. It is easy to look upon the auto today and call it "useful", but who thought so in its awkward infancy? Would the airplane have been considered "useful"? Or the radio? Or splitting the atom? Who among men is so wise that he can know these things in advance, and therefore be trusted with the power to permit or forbid them?

And who profited most from the creation and mass-production of the auto together with all its subsequent allied industries,—did Henry Ford? Or did the whole American people, whose standard of living was raised thereby? Did Henry Ford's accumulation of wealth come out of anyone else's pocket? Or did he create a new source of wealth for millions of less gifted people?

### Liberty Means Responsibility

MY argument against socialism is that America already has the best economic and political system yet devised, and that this is proven by her glorious record—and not in a paper blueprint. America did not become the breadbasket, the factory, the bank, and the hope of the world by following the wrong systems or believing in the wrong principles. Her solution is to reacquaint herself with her own best way of life, and to live up to its tenets more faithfully,—not to throw it away before she has completely understood or practiced it.

American capitalism has never failed; only some of our human capitalists have failed. Whenever a free-enterpriser achieves his own goal, and then attempts to shut the door of opportunity behind him, or to choke off the free play of competition around him,—then he has cheated his own system. Whenever believers in freedom discriminate against minorities, or show favoritism to meritless friends,—then they are sabotaging their own constitutional principles and weakening the foundations upon which America was built. Whenever any individual or group in America uses the political power to gain advantage at the expense of others,—then such persons or groups are undermining the structure of our Republic, and the results will be evil and unjust. Whenever an American acquires wealth or power, and then fails to be a good and honest steward of these benefits,—then he not only denies the principles of America, he denies the principles of Christianity.

The answer, and the only answer, is for all of us to educate ourselves to the responsibilities as well as to the benefits of freedom. Perhaps, as a people, we are not morally strong enough to be free. If that is the case, then we shall certainly lose our freedom, and it will not matter much what "ism" supplants Americanism. But this will not prove that our free way of life was not the best way. It will only prove that we were not worthy of it.

# Combination of Wool Protein with Heavy Metal Salts as a Function of pH

## *II—Potassium Dichromate*

KERMIT S. LaFLEUR

### Objectives

TWO immediate objectives in studying wool-potassium dichromate relationships as a function of pH are (1) to gather further[1, 2, 3] empirical data indispensable to the interpretation of the amphoteric dissociation of wool, and (2) to gather data necessary for understanding the nature of wool-chromable dyestuff-potassium dichromate combination.

Sodium dichromate is the "chrome" used in most woolen textile mills for improving the fastness to washing of chromable dyestuffs, but for analytical work the potassium salt is preferable since it contains no water of constitution, and can be weighed with greater accuracy. Practically, the two salts are interchangeable and there seems to be little reason to suspect that results obtained with one cannot be applied with equal validity to the other.

### Experimental Procedure

Swatches of woolen cloth prepared as previously described[2] were immersed in 1/100 baths of N/10 $K_2Cr_2O_7$* to which varying amounts of sulfuric acid or sodium hydroxide had been added, and were allowed to come to equilibrium both at room temperature (about 66 hours) and at the boil (1 hour under reflux condensers). The swatches were then rinsed in running water for 1 hour, dried, weighed, analyzed for pyridine extractable sulfate[4, 5] and total sulfate[6]; the chromic oxide content of the ash was determined on separate portions of the treated swatches after rinsing and drying.

Bath aliquots were titrated for total acid or base to the phenolphthalein end-point†, and for residual dichromate with potassium iodide, sodium thiosulfate and starch indicator. Since potassium dichromate hydrolyzes in solution and is titratable as a dibasic acid with sodium hydroxide, corrections for this effect were applied. Equilibrium pH values were obtained with a Coleman glass electrode pH meter. All pH determinations were made at room temperature, so the readings on the boiled set do not represent accurately the equilibrium conditions existing at the boil. The error appears unavoidable at the moment.

Results are shown in tables 1 and 2.

### Further Experiments

While tables 1 and 2 contain very pertinent data, it is apparent that they are insufficient to describe the wool-potassium dichromate-sulfuric acid-water system adequately. Among the problems raised and left unexplained are the discrepancy between the dichromate titration data and those calculated from the chromic oxide content of the ash of treated swatches; the falling off at low pH values of curves plotted from the latter; and the progressively increasing greeness of both swatches and baths with decreasing pH**.

In an effort to resolve these difficulties, a third set of swatches and baths was prepared, this time with N/10 $K_2Cr_2O_7$ as a bi-valent salt††. After boiling for 1 hour, the swatches were treated and analyzed as before. Aliquot portions of the baths were titrated for total acid content and unreduced dichromate; others were oxidized with sodium peroxide and titrated for total dichromate; a third series was converted to a green cationic chromium compound with oxalic acid[6]*** and the total sulfate content was determined.

Data appear in table 3. The calculations will be explained later.

### Discussions

While the chemistry of chromium is potentially confusingly complex[7], allowing wide latitude in drawing conclusions from experimental data which are not exhaustive, it seems the better approach in specific cases to apply the simplest explanation which appears to be in accord with empirical observations, at the risk of later correction. The simplest interpretation is attempted below.

Inspection of the data shows that the hydrogen ion and dichromate ion appear to be lost from the bath in approximately equivalent amounts except in those of low pH value which contain increased salt sulfate, and in which the swatches at equilibrium contain increased chromium-bound sulfate. This equivalence is most apparent in the set of experiments which came to equilibrium at room temperature, in which the baths contained relatively the most dichromate, and the swatches the least chrominum-bound sulfate. From this conclusion, and the fact that dichromate in solution is titratable as a dibasic acid, it appears that the following reaction takes place:

$$\begin{array}{lll} K_2Cr_2O_7 & \rightleftharpoons 2K^+ & + \ Cr_2O_7^= \\ H_2SO_4 & \rightleftharpoons SO_4^= & + \ 2H^+ \\ & & \downarrow\uparrow \\ & K_2SO_4 & + \ H_2Cr_2O_7 \end{array}$$

Many experiments have demonstrated that wool, throughout the usual range of conditions of treatment, has a maximum combining capacity of about 8-10 ml. of M/10 monovalent anion per gram[8, 9, 10, 11]. In order to fall close to this range, the dichromic acid formed as indicated must ionize as follows:

$$H_2Cr_2O_7 \rightleftharpoons H^+ + H.Cr_2O_7^-$$

Thus it seems that dichromic acid is monobasic (at least at low pHs) with respect to wool.

The equilibrium baths of low pH have been shown to contain oxidizable chromium (table 3, columns $A_b$ and $B_b$); the chromium-bound sulfate in the swatches, the salt sulfate of the bath, and the degree of greenness of both swatches and baths appear to vary directly as the difference between total and unreduced chromium. It therefore seems valid to assume that the increased greenness is due to partial reduction of the dichromate with corresponding binding of the sulfate

* N/10 with respect to oxidizing potential, i.e. M/60.

† The orange color of the dichromate ion is changed to the yellow of the chromate ion before this point is reached, in accordance with the reaction

$$Cr_2O_7^= \underset{OH-}{\overset{H+}{\rightleftharpoons}} 2CrO_4^=$$

so the end-point is acceptably distinct in baths of intermediate pH. Precipitation of wool decomposition products which occurred on neutralizing the baths of low pH made filtering necessary. The end-point in these cases was also obscured by a greenish-brown coloration, probably due to reduction of part of the dichromate.

** The greenness of the swatches increases with age and exposure.

†† To eliminate or corroborate the guess that the falling off of the chromic trioxide curve was due to insufficient dichromate in the bath at low pH values, which was due in turn to the increased reducing power of wool at these pHs.

*** With the idea of displacing any sulfate coordinately bound to chromium, and possibly unprecipitatable in that form, with oxalate ions.

**Table 1. Wool-potassium dichromate-sulfuric acid or sodium hydroxide-water relationships at room temperature**

| No. | Ml. N/10 $H_2SO_4$ used per 100 ml. | Ml. N/10 NaOH used per 100 ml. | pH in water solution | Initial pH | Ml. M/60* $Cr_2O_7^=$ found in bath at equilibrium | Ml. M/60 $Cr_2O_7^=$ lost from bath | Ml. N/10 $Cr_2O_7^=$ lost from bath | Apparent ml. N/10 H+ found in bath at equilibrium | $H_2Cr_2O_7$ correction† | Ml. N/10 H+ corrected | Ml. N/10 H+ lost from bath | Total sulfate from hydrolysed swatches as ml. N/10 $H_2SO_4$** | Ml. M/10 $H_2Cr_2O_7$ lost from bath | $Cr_2O_3$ from ash as ml. M/10 $H_2Cr_2O_7$ | Equilibrium pH | Percent loss in weight of treated swatch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 100 | | 1.2 | 1.2 | 44.5 | 55.5 | 18.5 | 95.7 | 14.8 | 80.9 | 19.7 | 5.0 | 9.25 | 5.45 | 1.7 | 3.4 |
| 2. | 76 | | 1.3 | 1.3 | 47.4 | 52.6 | 17.4 | 73.6 | 15.8 | 57.8 | 18.2 | 4.5 | 8.7 | 5.75 | 1.85 | 3.5 |
| 3. | 57 | | 1.4 | 1.4 | 50.3 | 49.7 | 16.8 | 56.7 | 16.8 | 39.9 | 17.1 | 4.0 | 8.4 | 5.5 | 1.95 | 2.9 |
| 4. | 45 | | 1.5 | 1.5 | 53.8 | 46.2 | 15.3 | 46.5 | 17.9 | 28.6 | 16.4 | 3.95 | 7.65 | 6.2 | 2.3 | 3.1 |
| 5. | 34.5 | | 1.6 | 1.6 | 55.3 | 44.7 | 14.9 | 37.6 | 18.4 | 19.2 | 15.3 | 3.45 | 7.45 | 6.25 | 2.4 | 2.9 |
| 6. | 20 | | 1.8 | 1.75 | 62.4 | 37.6 | 12.6 | 27.5 | 20.8 | 6.7 | 13.3 | 1.9 | 6.3 | 6.15 | 2.8 | 3.1 |
| 7. | 12 | | 2.0 | 2.0 | 69.1 | 30.9 | 10.3 | 25.0 | 23.0 | 2.0 | 10.0 | 0.95 | 5.15 | 4.9 | 3.6 | 2.2 |
| 8. | 7.0 | | 2.2 | 2.2 | 81.3 | 18.7 | 6.3 | 27.3 | 27.1 | 0.2 | 6.8 | 0.35 | 3.15 | 3.35 | 4.4 | 1.7 |
| 9. | 4.3 | | 2.4 | 2.4 | 88.7 | 11.3 | 3.8 | 28.7 | 29.6 | —0.9 | 5.2 | 0.2 | 1.9 | 1.9 | 4.9 | 1.0 |
| 10. | 2.5 | | 2.6 | 2.65 | 91.1 | 8.9 | 3.0 | 29.2 | 30.4 | —1.2 | 3.7 | 0.2 | 1.5 | 1.45 | 5.25 | 0.6 |
| 11. | 1.7 | | 2.8 | 2.8 | 91.6 | 8.4 | 2.8 | 29.0 | 30.5 | —1.5 | 3.2 | 0.05 | 1.4 | 1.3 | 5.4 | 0.9 |
| 12. | 1.3 | | 3.0 | 3.0 | 92.3 | 7.7 | 2.6 | 28.7 | 30.7 | —2.0 | 3.3 | | 1.3 | 1.25 | 5.45 | 0.7 |
| 13. | 0.6 | | 3.5 | 3.5 | 91.6 | 8.4 | 2.8 | 28.3 | 30.5 | —2.3 | 2.9 | | 1.4 | | 5.5 | 1.0 |
| 14. | 0.4 | | 4.0 | 3.85 | 92.5 | 7.5 | 2.5 | 28.3 | 30.8 | —2.5 | 2.9 | | 1.25 | | 5.5 | 1.1 |
| 15. | 0.0 | | about 7 | 4.6 | 91.7 | 8.3 | 2.8 | 27.7 | 30.6 | —2.9 | 2.9 | | 1.4 | 1.25 | 5.6 | 0.6 |
| 16. | | 0.3 | 10.0 | 4.75 | 92.4 | 7.6 | 2.6 | 27.5 | 30.8 | —3.3 | 3.0 | | 1.3 | | 5.6 | 0.2 |
| 17. | | 0.5 | 10.5 | 4.9 | 92.7 | 7.3 | 2.5 | 27.8 | 30.9 | —3.1 | 2.6 | | 1.25 | | 5.7 | 0.2 |
| 18. | | 1.0 | 11.0 | 5.15 | 92.8 | 7.2 | 2.4 | 27.4 | 30.9 | —3.5 | 2.5 | | 1.2 | | 5.8 | 0.4 |
| 19. | | 1.6 | 11.2 | 5.3 | 93.1 | 6.9 | 2.3 | 27.2 | 31.0 | —3.8 | 2.2 | | 1.15 | | 5.9 | 0.6 |
| 20. | | 2.8 | 11.45 | 5.5 | 94.3 | 5.7 | 2.0 | 26.6 | 31.4 | —4.8 | 2.0 | | 1.0 | 1.1 | 6.0 | 0.9 |
| 21. | | 4.0 | 11.6 | 5.7 | 94.2 | 5.8 | 1.9 | 25.5 | 31.4 | —5.7 | 1.9 | | 0.95 | | 6.1 | 0.9 |
| 22. | | 6.2 | 11.8 | 5.9 | 95.7 | 4.3 | 1.5 | 24.3 | 31.9 | —7.6 | 1.4 | | 0.75 | | 6.25 | 0.7 |
| 23. | | 10.0 | 12.0 | 6.1 | 96.9 | 3.1 | 1.0 | 20.4 | 32.2 | —11.8 | 1.8 | | 0.5 | | 6.45 | 1.0 |
| 24. | | 15.8 | 12.2 | 6.45 | | | | | | | | | | | | |
| 25. | | 25.3 | 12.4 | 6.8 | | | | | | | | | | 0.55 | | |
| 26. | No cloth | | about 7 | 4.6 | 100 | 0.0 | 0.0 | 33.3 | 33.3 | 0.0 | 0.0 | | | | 4.6 | |

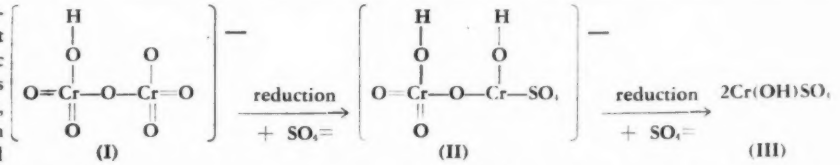
*N/10 with respect to oxidizing potential.
†Ml. M/60 $K_2Cr_2O_7$ x .333
**Pyridine extracted swatches.

**Table 2. Wool-potassium dichromate-sulfuric acid or sodium hydroxide-water relationships at the boil**

| No. | Ml. N/10 $H_2SO_4$ used per 100 ml. | Ml. N/10 NaOH used per 100 ml. | pH in water solution | Initial pH | Ml. M/60* $Cr_2O_7^=$ found in bath at equilibrium | Ml. M/60 $Cr_2O_7^=$ lost from bath | Ml. N/10 $Cr_2O_7^=$ lost from bath | Apparent ml. N/10 H+ found in bath at equilibrium | $H_2Cr_2O_7$ correction† | Ml. N/10 H+ corrected | Ml. N/10 H+ lost from bath | Total sulfate from hydrolysed swatches as ml. N/10 $H_2SO_4$** | Ml. M/10 $H_2Cr_2O_7$ lost from bath | $Cr_2O_3$ from ash as ml. M/10 $H_2Cr_2O_7$ | Equilibrium pH | Percent loss in weight of treated swatch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 100 | | 1.2 | 1.2 | 24.7 | 75.3 | 25.1 | 78.0 | 8.2 | 69.8 | 30.2 | 5.45 | 12.6 | 4.2 | 1.65 | 7.4 |
| 2. | 76 | | 1.3 | 1.3 | 32.4 | 67.6 | 22.5 | 57.2 | 10.8 | 46.4 | 29.6 | 8.05 | 11.3 | 5.1 | 1.8 | 6.6 |
| 3. | 57 | | 1.4 | 1.4 | 38.5 | 61.5 | 20.5 | 42.1 | 12.8 | 29.3 | 27.7 | 7.75 | 10.3 | 5.5 | 2.05 | 4.4 |
| 4. | 45 | | 1.5 | 1.5 | 44.5 | 55.5 | 18.5 | 34.9 | 14.8 | 20.1 | 24.9 | 7.7 | 9.25 | 6.1 | 2.15 | 4.8 |
| 5. | 34.5 | | 1.6 | 1.6 | 49.0 | 51.0 | 17.0 | 29.0 | 16.9 | 12.7 | 21.8 | 5.3 | 8.5 | 6.2 | 2.4 | 5.2 |
| 6. | 20 | | 1.8 | 1.75 | 60.4 | 39.6 | 13.2 | 24.4 | 20.1 | 4.3 | 15.7 | 3.0 | 6.6 | 6.0 | 2.95 | 4.0 |
| 7. | 12 | | 2.0 | 2.0 | 70.2 | 29.8 | 9.95 | 24.7 | 23.4 | 1.3 | 10.7 | 1.05 | 5.0 | 4.25 | 3.65 | 3.8 |
| 8. | 7.0 | | 2.2 | 2.2 | 80.4 | 19.6 | 6.55 | 27.1 | 26.8 | 0.3 | 6.7 | | 3.3 | 2.8 | 4.35 | 3.2 |
| 9. | 4.3 | | 2.4 | 2.4 | 86.0 | 14.0 | 4.65 | 28.5 | 28.6 | —0.1 | 4.4 | | 2.35 | 2.0 | 4.8 | 4.0 |
| 10. | 2.5 | | 2.6 | 2.65 | 89.5 | 10.5 | 3.5 | 29.2 | 29.8 | —0.6 | 3.1 | | 1.75 | 1.5 | 5.05 | 3.8 |
| 11. | 1.7 | | 2.8 | 2.8 | 90.0 | 10.0 | 3.35 | 29.0 | 30.0 | —1.0 | 2.7 | | 1.7 | | 5.2 | 3.6 |
| 12. | 1.3 | | 3.0 | 3.0 | 90.3 | 9.7 | 3.25 | 28.9 | 30.0 | —1.1 | 2.4 | | 1.65 | 1.25 | 5.25 | 3.8 |
| 13. | 0.6 | | 3.5 | 3.5 | 92.1 | 7.9 | 2.65 | 28.9 | 30.7 | —1.8 | 2.4 | | 1.35 | | 5.35 | 3.0 |
| 14. | 0.4 | | 4.0 | 3.85 | 91.2 | 8.8 | 2.95 | 29.0 | 30.4 | —1.4 | 1.8 | | 1.5 | | 5.4 | 2.8 |
| 15. | 0.0 | | about 7 | 4.6 | 91.6 | 8.4 | 2.8 | 28.8 | 30.5 | —1.7 | 1.7 | | 1.4 | 1.1 | 5.4 | 2.8 |
| 16. | | 0.3 | 10.0 | 4.75 | 91.5 | 8.5 | 2.85 | 28.8 | 30.5 | —1.7 | 1.4 | | 1.45 | | 5.45 | 3.4 |
| 17. | | 0.5 | 10.5 | 4.9 | 92.3 | 7.7 | 2.55 | 28.8 | 30.7 | —1.9 | 1.4 | | 1.3 | | 5.5 | 3.4 |
| 18. | | 1.0 | 11.0 | 5.15 | 92.8 | 7.2 | 2.4 | 28.6 | 30.9 | —2.3 | 1.3 | | 1.2 | | 5.6 | 3.2 |
| 19. | | 1.6 | 11.2 | 5.3 | 89.6 | 10.4 | 3.45 | 27.2 | 29.8 | —2.6 | 1.0 | | 1.75 | | 5.65 | 3.6 |
| 20. | | 2.8 | 11.45 | 5.5 | 93.3 | 6.7 | 2.25 | 27.3 | 31.0 | —3.7 | 0.9 | | 1.15 | 0.9 | 5.75 | 3.2 |
| 21. | | 4.0 | 11.6 | 5.7 | 93.8 | 6.2 | 2.05 | 26.5 | 31.2 | —4.7 | 0.7 | | 1.05 | | 5.85 | 3.6 |
| 22. | | 6.2 | 11.8 | 5.9 | 94.0 | 6.0 | 2.0 | 24.7 | 31.3 | —6.6 | 0.4 | | 1.0 | | 6.05 | 4.4 |
| 23. | | 10.0 | 12.0 | 6.1 | 94.2 | 5.8 | 1.95 | 21.0 | 31.4 | —10.4 | 0.4 | | 1.0 | | 6.25 | 4.0 |
| 24. | | 15.8 | 12.2 | 6.45 | 92.7 | 7.3 | 2.45 | 16.1 | 30.9 | —14.8 | —1.0 | | 1.25 | | 6.5 | 4.8 |
| 25. | | 25.3 | 12.4 | 6.8 | 94.4 | 5.6 | 1.85 | 6.9 | 31.4 | —24.5 | —0.8 | | 0.95 | 0.65 | 6.9 | 4.8 |
| 26. | No cloth | | about 7 | 4.6 | 100 | 0.0 | 0.0 | 33.3 | 33.3 | 0.0 | 0.0 | | | | 4.6 | |

*N/10 with respect to oxidizing potential.
†Ml. M/60 $K_2Cr_2O_7$ x .333
**Pyridine extracted swatches.

ion. In the case of the baths, some reduction may have gone as far as trivalent cationic chromium, but since cationic chromium reacts but little at the low pHs at which the greatest reduction occurs*, it must be assumed that the chromium contained in the swatches has remained anionic. This is most simply explained by the progressive reduction illustrated below†:




(I) (II) (III)

*Unpublished data collected in this laboratory on wool-chromium sulfate or chromium fluoride relationships as a function of pH; a report is being prepared.

†One alternative is the possibility of displacement of O by $H_2O$ or $SO_4^=$[12] yielding $[Cr(SO_4)_3]^{\equiv}$ or $[Cr(H_2O)OH(SO_4)_2]^=$ or $[Cr(H_2O_2(SO_4)_2)_2]^-$

Table 3. Wool-potassium dichromate-sulfuric acid-water relationships at the boil: N/10 $K_2Cr_2O_7$ as a bi-valent salt

| No. | ML. N/10 $H_2SO_4$ used per 100 ml. | pH in water solution | Initial pH | ML. unreduced N/10 $Cr_2O_7^=$ found in bath at equilibrium (Ab) | ML. N/10 $Cr_2O_7^=$ found in bath after oxidation (Bb) | Difference (Bb — Ab) | Apparent mL. N/10 H+ found in bath at equilibrium (T) | ML. N/10 H+ corrected (T — Ab) | ML. N/10 H+ lost from bath | Total sulfate from hydrolyzed swatches as mL. N/10 $H_2SO_4$(Ss)** | Total sulfate in bath as mL. N/10 $H_2SO_4$ | Total sulfate found in system as mL. N/10 $H_2SO_4$ | Salt sulfate in bath as mL. N/10 $H_2SO_4$ (Sb) (includes $K_2SO_4$) | Approx. per cent $H_2CrO_4Cr(OH)SO_4$ or equiv. present at equil. in bath $\frac{2A_b - B_b}{B_b}$ | Approx. per cent $H_2CrO_4Cr(OH)SO_4$ or equiv. present at equil. in swatch $\frac{2B_s - S_s}{B_s}$ | Approx. per cent $H_2CrO_4Cr(OH)SO_4$ or equiv. present at equil. in swatch $\frac{2B_s - S_s}{100 - B_s}$ | ML. M/10 $H_2Cr_2O_7$ lost from bath | $Cr_2O_3$ from ash as mL. M/10 $H_2Cr_2O_7$ (Bs) | Equilibrium pH | Percent loss in weight of treated swatch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 100 | 1.2 | 1.35 | 59.7 | 77.6 | 17.9 | 111 | 51.3 | 48.7 | 11.2 | 88.1 | 99.3 | 36.8 | 54.0 | 48.5 | 51.5 | 11.2 | 10.9 | 2.3 | 16.0 |
| 2. | 76 | 1.3 | 1.4 | 63.7 | 76.1 | 12.4 | 99.0 | 35.3 | 40.7 | 12.1 | 65.0 | 77.3 | 29.7 | 67.5 | 50.0 | 50.0 | 12.1 | 12.1 | 2.45 | 11.4 |
| 3. | 57 | 1.4 | 1.5 | 66.9 | 76.2 | 9.3 | 91.4 | 24.5 | 32.5 | 8.5 | 50.0 | 58.5 | 25.5 | 73.5 | 65.5 | 34.5 | 11.9 | 12.3 | 2.5 | 9.6 |
| 4. | 45 | 1.5 | 1.6 | 71.7 | 76.0 | 4.3 | 86.5 | 14.8 | 30.2 | 7.65 | 37.2 | 44.9 | 22.4 | 88.5 | 65.5 | 34.5 | 12.0 | 11.1 | 2.7 | 8.8 |
| 5. | 34.5 | 1.6 | 1.7 | 76.5 | 79.3 | 2.8 | 84.0 | 7.5 | 27.0 | 3.45 | 31.7 | 35.2 | 24.2 | 93.0 | 81.5 | 18.5 | 7.0 | 10.4 | 2.95 | 8.0 |
| 6. | 20 | 1.8 | 1.9 | 83.2 | 84.1 | 0.9 | 86.9 | 3.7 | 16.3 | 0.95 | 19.1 | 20.1 | 15.4 | 97.5 | 93.0 | 7.0 | 2.0 | 8.0 | 8.05 | 3.6 | 6.6 |
| 7. | 12 | 2.0 | 2.1 | 88.7 | 89.8 | 1.1 | 91.5 | 2.8 | 9.2 | 0.5 | 12.4 | 12.9 | 9.6 | 99.5 | 95.0 | 5.0 | 2.5 | 5.1 | 5.2 | 4.35 | 5.6 |
| 8. | 7.0 | 2.2 | 2.3 | 94.5 | 94.5 | — | 94.7 | 0.2 | 6.8 | 0.25 | 8.1 | 7.65 | 3.4 | 100 | 96.0 | 4.0 | 0 | 2.75 | 3.4 | 4.8 | 6.6 |
| 9. | 4.3 | 2.4 | 2.5 | 94.5 | 94.3 | — | 94.3 | —0.2 | 4.5 | 0.2 | 5.0 | 4.8 | 3.2 | 100 | 95.5 | 4.5 | 0 | 2.8 | 2.3 | 5.05 | 5.4 |
| 10. | 2.5 | 2.6 | 2.75 | 96.1 | 96.3 | — | 94.7 | —1.4 | 3.9 | neglig. | 3.2 | 3.2 | 3.2 | 100 | 100 | 0 | 0 | 1.9 | 1.8 | 5.2 | 4.8 |
| 11. | 1.3 | 3.0 | 3.1 | 97.1 | 96.4 | — | 94.3 | —2.8 | 4.1 | neglig. | 1.75 | 1.75 | 1.75 | 100 | 100 | 0 | 0 | 1.6 | 1.85 | 5.3 | 4.2 |
| 12. | 0 | about 7 | 4.3 | 96.0 | 95.7 | — | 92.2 | —3.8 | 3.8 | neglig. | 0 | 0 | 0 | 100 | 100 | 0 | 0 | 2.1 | 1.55 | 5.4 | 4.4 |

*Pyridine extracted swatches.

Table 4. Hydrogen ion distribution in experiments of set 3

| No. | Total N/10 H+ originally present in solution due to $H_2SO_4$ | Total N/10 H+ in bath at equilibrium (corrected) | Total N/10 H to be accounted for in bath and swatch | N/10 H assignable to swatch if as $H_2CrO_4CrX$ OH —$CrSO_4$ | N 10 H assignable to bath if as $Cr_2(SO_4)_3$ OH —$CrSO_4$ | | Totals |
|---|---|---|---|---|---|---|---|
| 1. | 100 | 51.3 | 48.7 | 22.4 | 11.2 | 0 | 17.9 | 33.6-51.5 |
| 2. | 76 | 35.3 | 40.7 | 23.9 | 12.1 | 0 | 12.4 | 36.0-48.4 |
| 3. | 57 | 24.5 | 32.5 | 23.8 | 8.5 | 0 | 9.3 | 32.3-41.6 |
| 4. | 45 | 14.8 | 30.2 | 24.0 | 7.65 | 0 | 4.3 | 31.7-36.0 |
| 5. | 34.5 | 7.5 | 27.0 | 20.7 | 3.45 | 0 | 2.8 | 24.2-27.0 |
| 6. | 20 | 3.7 | 16.3 | 16.0 | 0.95 | 0 | 0.9 | 17.0-17.9 |
| 7. | 12 | 2.8 | 9.2 | 10.2 | 0.5 | 0 | 1.1 | 10.7-11.8 |
| 8. | 7 | 0.2 | 6.8 | 5.5 | 0.25 | 0 | 0 | 5.75 |
| 9. | 4.3 | —0.2 | 4.5 | 5.6 | 0.2 | 0 | 0 | 5.8 |
| 10. | 2.5 | —1.4 | 3.9 | 3.8 | 0 | 0 | 0 | 3.8 |
| 11. | 1.3 | —2.8 | 4.1 | 3.2 | 0 | 0 | 0 | 3.2 |
| 12. | 0 | —3.8 | 3.8 | 4.2 | 0 | 0 | 0 | 4.2 |

Only I and II could be bound by wool to a significant extent under the conditions described.

Assuming the correctness of this interpretation, and neglecting for the moment the probable formation of some basic chromium sulfate in the bath, it is possible to calculate the relative proportions of reduced to partially reduced chromium in swatches and baths. If $A_b$ represents total unreduced chromium ($H_2Cr_2O_7$—$H_2CrO_4X$) and $B_b$ represents total hexavalent chromium after oxidation, then $\frac{2A_b - B_b}{B_b}$ must represent the fraction of unreduced to partially reduced chromium ($H_2CrO_4Cr(OH)SO_4$) in the bath; and conversely $\frac{2(B_b - A_b}{B_b}$) should give the fraction of partially reduced to unreduced chromium in the bath. Similarly, if $S_s$ represents total sulfate in the swatches and $2B_s$ the total chromium, $\frac{2B_s - S_s}{S_s}$ is the fraction of partially reduced to unreduced chromium in the swatch. Results of these calculations appear in table 3.

Of the relevant ions, hydrogen, sulfate and chromate, the latter two have been traced in bath and swatch and accounted for within the expected range of experimental error (table 3). The hydrogen ion may now be assigned roughly on the basis of the formulas discussed above (see table 4).

## Conclusion

In attempting to correlate the degree of reactivity of specific wool groups with a complex-forming element like chromium, more particularly in the case of dichromates, it is well to remember that oxidation of wool has been demonstrated to occur at the disulfide linkage[10] and that combination of cystine with heavy metals is possible[11, 12].

In any case, supposing that the quantity of dichromic acid which can combine with wool is determined initially by the available ionized amino groups, the notable proneness of chromium for forming complexes and the comparative irreversibility of wool-dichromic acid compounds seems to indicate that the union becomes strengthened with other bonds.

The primary objective of correlating theoretical dissociation curves of wool protein with empirical combination curves cannot be attempted until representative reactions covering the whole field have been studied. Outstanding among the ions remaining to be examined are the large organic anions of acid dyestuffs, certain wetting agents and synthetic detergents; the large cations of basic dyestuffs and certain softeners; and possibly enough additional complex-forming elements to indicate the nature and extent of participation of the cystine residue in wool keratin reactions.

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# TRADE NOTES • NEW PRODUCTS

## • Shrinkage Control Crush Resistant Resin

"Formaset SR", said to be a new and entirely different shrinkage control process imparting a considerable degree of crush resistance to rayon fabrics, was announced recently by Ernest Nathan, president of Warwick Chemical Company, a Division of Sun Chemical Corporation.

Mr. Nathan stated: "Our laboratories have developed in Formaset SR a resin which ensures shrinkage stabilization for the life of the fabric, as the resin in the cured state is completely insoluble. Because of its chemical nature it cannot contain chlorine or develop amine odors. It imparts in most cases a considerable degree of crush resistance. Formaset SR reduces the moisture regain of a rayon fabric from the normal 11% to around 4%, with a subsequent slight gain in dry tensile strength and a very measurable gain in wet tensile strength."

## • Booklet on Water Demineralizers

A new 26-page booklet, entitled "FILT-R-STIL Demineralizers Deliver Low-Cost Chemical Equivalent of Distilled Water", has just been issued by the American Cyanamid Company.

This two-color, profusely illustrated booklet cites the advantages of demineralized water over distilled water, describes briefly the chemical and mechanical principles of demineralization by ion exchange, and gives data on calculating costs for demineralizing various raw waters.

Copies of the booklet are available without charge from American Cyanamid Company, Ion Exchange Products Department, 30 Rockefeller Plaza, New York 20, N. Y.

## • DCAT Section Officers

The Drug, Chemical and Allied Trades Section of the New York Board of Trade (DCAT) has elected the following officers of the Section to serve during the next fiscal year: *Chairman*—Fred J. Stock, Vice President of Chas. Pfizer & Co., Inc.; *Vice Chairman*—Robert B. Magnus, Magnus Mabee & Reynard, Inc.; *Treasurer*—Hugh S. Crosson, McKesson & Robbins Inc. (re-elected); *Secretary*—Helen L. Booth (re-elected). Carl M. Anderson, Ass't. to President, Merck & Co., Inc. was re-appointed Counsel.

The retiring Chairman, Dr. Carle M. Bigelow (Manager of Pharmaceutical Department, Calco Chemical Division, American Cyanamid Company) automatically becomes a member of the Section's Advisory Council, composed of the ex-chairmen for the past five years.

The personnel of the new Executive Committee (exclusive of officers) follows: William T. Allen (Topics Publishing Company); Stanley I. Clark (Sterling Drug Inc.); James DeCesare (White Laboratories, Inc.); F. S. Dieterich (The Mennen Company); James G. Flanagan (S. B. Penick & Company); Dr. Russel J. Fosbinder (The Maltbie Chemical Company); Harold C. Green (L. Sonneborn Sons, Inc.); Robert L. Hutchins (Commercial Solvents Corporation); Charles M. Macauley (Pro-phy-lac-tic Brush Company); John P. Remensnyder (Heyden Chemical Corporation); Clark L. Rodgers (Owens-Illinois Glass Company); E. L. Shattuck (Abbott Laboratories); Fred J. Singer (E. I. duPont de Nemours & Co., Inc.); Gerald L. Smith (American Home Products Corporation); Lloyd I. Volckening (The Ivers-Lee Company); Charles P. Walker (Citro Chemical Company).

Harold M. Altshul, President of Ketchum & Co., Inc. was elected Section Representative to the Board of Directors of the New York Board of Trade.

## • Joins Quaker Chemical

*Dr. Hugh H. Mosher, who has joined Quaker Chemical Products Corporation, Conshohocken, Pa., as Director of Organic Research. Dr. Mosher was with Onyx Oil & Chemical Company for fourteen years and was vice president in charge of textile research and development.*

*Dr. Mosher completed his undergraduate and graduate studies at Leland Stanford University and then served as assistant professor of chemistry at the University of Nevada. He was later chief chemist for the U. S. Testing Company and research chemist for Cheney Brothers Silk Mills. He is a holder of many patents and is active in the American Association of Textile Chemists and Colorists and the American Chemical Society. He was awarded first prize for the best paper presented during 1930 before a meeting of the AATCC.*

## • Hooker Adds to Sales Staff

John M. Glaze has been transferred to the New York sales office of the Hooker Electrochemical Company. During the past year he has been associated with the sales department of the home office in Niagara Falls.

A graduate chemist of Dartmouth, Mr. Glaze joined Hooker in 1942 as a research process foreman and has also been associated with the purchasing department. His territory will include portions of the metropolitan area in both New York and northern New Jersey.

## • Contribution to PTI

Contributions totaling $35,000 by the Kent Manufacturing Company, Clifton Heights, to the fund for a new school plant for the 65 year old Philadelphia Textile Institute, were announced recently by Edward H. Rakestraw, Chairman of the Civic Appeal for the Philadelphia Textile Institute Foundation.

The gifts were made on behalf of the company by Everett L. Kent, president, nationally known in the woolen textile field and prominent in Philadelphia's civic affairs.

The Philadelphia Textile Institute Foundation has recently acquired a new site for the Institute at Schoolhouse Lane and Henry Ave., Germantown and plans for the erection of a new school are now under way and awaiting only the full realization of the $2,000,000 goal necessary to begin the erecting of new buildings. Over $1,000,000 in gifts has already come to the Foundation, more than half of which came from individuals and corporations affiliated with the textile industry outside of the State of Pennsylvania.

## • Nuodex Promotion

Promotion of George H. Moyer from Chicago District Manager to Sales Manager of the North Central Region, has

been announced by John W. Van Tuin, Sales Manager of the Western Division of the Nuodex Products Co., Inc., Elizabeth F, N. J.

Mr. Moyer, whose headquarters will remain at the Nuodex office in Chicago at 600 South Michigan Avenue, will be responsible for the direction of sales in the Chicago area as well as of the Nuodex activities in the states in his territory which includes Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Colorado, Nebraska, South Dakota, North Dakota, Montana and Wyoming.

## • Joins Virginia-Carolina Chemical Corp.

Donald A. Hoffmann, Textile Chemist, has resigned his position with U. S. Industrial Chemicals, Newark, N. J., and is now connected with the Fiber Division of Virginia-Carolina Chemical Corporation at Cartaret, N. J., engaged in textile research.

## • Paper on Applied Research

Successful applied research in the textile field is particularly difficult because test methods are scarce and inaccurate and there has not been enough basic study of the problems involved. This was the statement of Dr. D. H. Powers, director of the Textile Chemical Department, Monsanto Chemical Company, before members of the American Chemical Society at the Hotel Commodore, New York, on September 16th. Dr. Powers spoke on the subject, "Applied Research in the Textile Industry."

Adequate test methods to accurately measure the properties needed do not exist for work clothing and little progress has been made, he said. In the case of crush-resistant fabrics, improved tests are needed. But for weel socks, suitable testing procedures are available and applied research has produced great improvements.

"The only method of evaluating improved crush-resistance," Dr. Powers continued, "has been to fold in half a small test sample of the fabric and note the chord of the angle of recovery after three minutes. The accuracy of the test is very poor. Progress in applied research on this problem has been slow also because little emphasis has been placed on fabric structure, which is as important, if not more important, than the nature of the fibers in the fabric. It is hard to realize that resilient yarns can be woven into fabrics with poor crease-recovery and that brittle yarns have produced fabrics of surprisingly high resistance to crushing.

"Recent research at our laboratories has indicated that better test methods can be set up for measuring crease-resistance and crease recovery. When these test methods are available, a much more accurate picture of the problem is possible and progress can be expected.

"An example of successful applied research in textiles came during the war when the Quartermaster Corps of the U. S. Army requested shrinkage resistance in woolen socks. A simple test was developed for measuring the shrinkage of the foot of the sock after washing with mechanical agitation.

"One mill was in actual production with the process to reduce shrinkage. But members of its technical staff assisted other mills with their dyeing and finishing problems. Soon an increasing number of mills was able to supply these socks of improved shrinkage control.

"The Army was also interested in shrink resistant blankets, and a few mills supplied thousands of yards, but they were not in a position to furnish technical help to other mills and the production was limited. It is only since the war that continuous mill production of resin-treated blankets has been achieved with excellent washability and durability. Application research in this field has been concentrated on simplicity of mill application on existing equipment and on establishing a single test for checking control."

## • Joins Standard Brands

*Gordon M. Booth, who has been appointed textile representative in the South for Standard Brands, Inc., 595 Madison Ave., New York. The announcement was made by S. W. Fiske, manager of the Diastafor Department, Special Products Division.*

*Mr. Booth was previously employed by the Beattie Manufacturing Company and attended the Philadelphia Textile Institute. During the war he served with the U. S. Army Signal Corps.*

"Well, what do you think of my proposition, Mr. Carter—is it a deal?"

BILL KING

Copyright 1947 Cartoons-of-the-Month

## • Newest Definized Licensee

Latest major finisher to become a licensee of the Definized and Definized "G" processes of rayon and cotton shrinkage control is the American Finishing Company of Memphis, Tennessee.

Charles F. Goodman, company president, announces that adoption of the Definized program is in line with his organization's newly announced policy of expanding operations to include rayon as well as cotton stabilization.

"To insure success in our new venture we have adopted all the latest and best methods in rayon converting," says Mr. Goodman. "Thus all rayon fabrics will be vat-dyed on the newest models in Williams' units."

Mr. Goodman states further that use of the Definized processes means that all American-finished rayons are guaranteed washable both by home and commercial methods, and that residual shrinkage is limited in most cases to within 1%.

Adoption of the Definized processes by American Finishing brings to fifteen the number of licensees using the controls which were developed by the Alrose Chemical Company of Providence, Rhode Island.

## • Stein, Hall Appointment

Stein, Hall & Company, Inc., with headquarters in New York City, announce the appointment of William N. Kline, Jr. as manager of the company's branch office in Charlotte, North Carolina, as of August 27, 1947.

Mr. Kline, a graduate of Clemson Col-

lege, S. C., class 1929, has been associated with the company since June 1929. At that time he joined the Charlotte branch as a chemist. In 1930, he was transferred to the sales staff of the same office and was appointed Assistant Manager thereof in the spring of 1943. Since June 1, 1947, Mr. Kline has been directing the Charlotte office as Acting Manager.

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## • Dyeing Company Installs Lixator

A new Lixator installed recently at the Electric City Dyeing Company, Scranton, Pa., supplies 100 gallons of self-filtered, saturated brine per hour for use in the dye vats. It is stated that substitution of this brine for dry salt in dye houses tends to provide more level dyeing and to eliminate streaks, spots and whitened edges because it disperses immediately and evenly throughout the dye solution.

Companies using Lixate brine are also said to report that it saves approximately 12 per cent of the salt required for all types of dyeing because, when brine is added to the bath, all of it is used, whereas with dry salt an excess must be employed to give the same results.

*Installation of Lixator*

Developed by the International Salt Company, Inc., the Lixator consists of a rock salt storage hopper over a dissolving tank with a brine collection chamber. Rock salt flows by gravity from the hopper into the tank beneath it until the tank is completely filled. Water enters this tank near the top and dissolves rock salt as it flows downward. About half-way down the water becomes fully saturated brine, and the remainder of the rock salt in the tank acts as a filter bed that removes all insoluble matter from the brine, so that, when it reaches the collection chamber, it is both saturated and crystal clear.

Because its operation is completely automatic, and because it makes it possible for a company to pipe brine anywhere in the plant instead of hauling dry salt, the Lixator is also said to cut brine-making labor costs considerably.

In addition it is said to dispense with the use of bins for dry salt storage. Finally, with a Lixator, there is no loss of salt such as occurs when fine salt hardens in storage and has to be repulverized.

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## • Hydroquinone Derivatives Available

Tennessee Eastman Corporation, Kingsport, Tennessee, is now making available in commercial quantities a number of hydroquinone derivatives which until recently were obtainable only in laboratory amounts.

Hydroquinone is well known as an antioxidant and stabilizing agent for preventing deterioration of fats, oils, and resin monomers. Its low oil solubility and high water solubility, however, are restrictive. To overcome these restrictions, Tennessee Eastman has produced two simple derivatives — hydroquinone mono methyl ether and 2,5-ditertiary butyl hydroquinone. Both of these derivatives are considerably more oil soluble and less water soluble than hydroquinone. In addition, both hydroquinone mono methyl ether and 2,5-ditertiary butyl hydroquinone show less tendency to discolor. Tennessee Eastman's hydroquinone mono methyl ether is presently in use as a stabilizing agent in several textile lubricating-oil formulas. It is stated that, because of the stability of the ether groups, this compound is a promising raw material for organic syntheses, and it has many possibilities in the fields of drugs, cosmetics, and dyes.

2,5-ditertiary butyl hydroquinone has been found suitable as a preservative in both synthetic and natural rubber compositions, in addition to serving as an antioxidant in vegetable fats and oils. It is a good polymerization inhibitor for styrene and other resin monomers. Nonstaining and nondiscoloring, it is particularly useful for stabilizing latices and white stock such as are employed in many mechanical rubber fabrications. According to the company, this chemical is the first new nonstaining antioxidant for rubber that has appeared in several years.

Hydroquinone dimethyl ether—another derivative—is said to be very stable, and to be unaffected by boiling acids or alkalies. Since the ring hydrogens are labile, it has many possibilities in organic syntheses. This chemical has a very pleasing fragrance of sweet clover. For this reason, it is finding acceptance in the perfume industry, particularly in the formulation of soap perfumes. It is also useful as a weathering agent for paints and plastics, and is of interest for sun-tan lotions and creams.

Further processing of hydroquinone dimethyl ether leads to amino hydroquinone dimethyl ether, a valuable intermediate in the manufacture of certain naphthol dyes—as is its sister compound, amino hydroquinone diethyl ether. Tennessee Eastman states it has made these two compounds commercially available in a pure form for the first time.

Other Tennessee Eastman hydroquinone derivatives include toluhydroquinone, hydroquinone diethyl ether, hydroquinone di-n-butyl ether, hydroquinone mono ethyl ether, hydroquinone mono-n-butyl ether, and hydroquinone di (beta hydroxyethyl) ether. In addition, Tennessee Eastman produces anilides, anilines and toluidines, quinolines, aminophenol, phenylenediamine, and substituted quinone, a complete line of aliphatic chemicals, and several inorganic chemicals.

"If that first check doesn't bounce, just let me know and I'll pay you the full amount immediately"

GARDNER REA

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## • Report on Emulsifying Agents

Additional data on German chemical developments in emulsifying agents are contained in a report now on sale by the Office of Technical Services, Department of Commerce. The report supplements an earlier one released by OTS dealing with German emulsifying agents, wetting agents, detergents, and soap substitutes.

The report was prepared by Lester F. Hoyt, consultant to the Office of the Quartermaster General, U. S. Army, following an investigation of the German industry.

The report (PB-3867; *German chemical developments in emulsifying agents;* photostat, $4; microfilm 50 cents; 47 pages) deals primarily with the quantities, properties, and uses of the emulsifiers, but also

contains several of the chemical formulas and production processes.

An earlier report (PB-6684; *Synthetic emulsifying agents, wetting agents, detergents and soap substitutes"*; photostat, $3; microfilm, 50 cents; 38 pages) also on sale by OTS, describes the chemical composition and manufacturing process for "Igepon", "Igepals," "Mersol" emulsifiers, "Tylose", "Dismulgans" and other synthetic products manufactured by I. G. Farbenindustrie. I. G. Farben sold 75 million pounds of synthetic detergents annually during the war, according to this report.

Orders for reports should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C., and should be accompanied by check or money order, payable to the Treasurer of the United States.

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## • Houghton Folder

A new descriptive folder on Houghto-Size CW, a one-piece sizing agent which combines softener, binder and plasticizer, is now available upon request from E. F. Houghton & Co., 303 W. Lehigh Ave., Phila. 33, Pa.

Houghto-Size CW, developed in the years of material shortages during and immediately after the War, is said to have proven its outstanding merits in production as a new, economical concept of warp size material, offering improved weaving results with a new low kettle cost. Ask for Folder 2-316.

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## • Catalog on I.G. Dyes

Research information Service, 509 Fifth Avenue, New York 17, N. Y., has issued a catalog on translations of I. G. Farben patent applications, patents and manufacturing data pertaining to dyes and dyeing. Copies are available on request.

The company also offers individual translations of German and French documents to manufacturers and research institutions. They will process any technical foreign-language document submitted for translation and will procure documents considered for translation. Rates for individual translations vary depending on the subject matter and the length of the document. A brief description of the contents of any document considered for translation and a cost estimate are given without charge upon inspection.

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## • 1948 Spring Woolen and Rayon Cards

The regular editions of the 1948 Spring Woolen Card and the 1948 Spring Rayon Card have recently been issued to members of The Textile Color Card Association, it has been announced by Margaret Hayden Rorke, managing director. Each edition portrays forty shades and contains, in addition to many highlighted collections, important basic colors arranged in harmonious groups of tone-on-tones.

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## • Booklet on Paraplex Resins

A new booklet on the properties of certain plasticizers and modifiers for polyvinyl chloride, the vinyl copolymer resins and elastomers of the acrylonitrile-butadiene type is now being made available by the Resinous Products & Chemical Co. of Philadelphia.

Discussing two of the company's important plasticizing resins, Paraplex G-25 and G-40, the booklet provides information on the properties of these non-migrating resinous polyesters and their use in such industrial applications as free films, extruded compounds, cable lacquers, fabric and paper coatings, gasket stocks, can linings and closures, and cements and asphalt compounds.

The new booklet "Paraplex G-25 and G-40" may be obtained by writing the Resinous Products & Chemical Co., Washington Square, Philadelphia 5, Pa.

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## • New Monsanto Office

Opening of a new Monsanto Chemical Company office in Philadelphia was announced recently by the company. The office, which will be located in the Widener Building, at Juniper and Chestnut Sts., will handle all Monsanto sales with emphasis on Organic, Phosphate, and Merrimac Division products.

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## • Guest Speaker at Calco

Professor E. K. Rideal, Director of the Royal Institute of London, was guest speaker at a recent gathering of the research and technical staff of the Calco Chemical Division, American Cyanamid Company, Bound Brook, N. J.

Dr. Rideal is a well-known physical chemist and was one of the chief speakers at the 100th anniversary meeting of the Chemical Society held earlier this year in London. He spoke on the subject "Mono Layer Films", on which he is an outstanding authority, at the Calco research staff meeting.

Dr. Rideal is Professor of Colloid Science, Cambridge University. He is chairman of the Chemical Societies Council and in 1946 received the highest scientific recognition granted a scientist in England when he was named Director of the Royal Institute. He is a veteran of World War I and has served on many scientific commissions for his government.

Dr. Rideal observed that advanced mechanization of industrial technical laboratories and the remarkable instrumentation of American industry held important economic implications. He stated that British industry had not been able to effect any substantial plant modernization during the war years since their chief problem was one of survival.

In respect to present world conditions, Dr. Rideal remarked that "some ideals are not quite enough—we have seen that in the U.N."

*Dr. Rideal tours Calco Research Laboratories with company officials. Reading left to right:—Dr. R. H. Kienle, Dr. E. K. Rideal, Mr. A. Merz, Dr. V. L. King.*

SANDOZ PRESENTS *The color achievement of the month*

# *October Color* BY HADLEY

In superbly soft cashmere, The Cashmere Corporation of America reproduces the luminous yellow of October in sweaters that find their way, through Hadley & Company, to some of America's finest stores.

Erie Dyeing and Processing Company, dyers for Hadley knitwear, include Sandoz among their suppliers with the confidence that Sandoz colors are in accord with fashion, are sure-handling in the dyeing operation, and can be counted on for fastness in wear.

Among the new and faster Sandoz colors for sweater yarns is

Xylene Milling Yellow 3GL.

This product has unusual fastness to washing, water, salt water and perspiration, which — with its excellent fastness to light — makes it ideal for yarns going into sweaters and bathing suits. For those fabrics which have to be fulled, this Sandoz color is unexcelled among bright yellows of similar shade, for its fastness to fulling.

For acid, chrome or direct dyes . . . or auxiliary chemicals . . . for both natural and synthetic fibres . . . be guided by the successful "color achievements" you have been seeing in these Sandoz advertisements. Sandoz application laboratories are located in New York, Boston, Philadelphia, Charlotte, Los Angeles, and Toronto, where stocks are carried. Other branches are in Chicago, Paterson and Providence.

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SANDOZ *thinks ahead with textiles*

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# *Serving* the entire Textile Industry

*New* TEXTILES,

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...*New* TESTS

SINCE ITS FOUNDING in 1880, the United States Testing Company, Inc. has served the entire textile industry.

Whenever technological gains have been made, we have expanded our testing facilities to furnish facts regarding the worth and serviceability of the new achievements.

In the past we pioneered the development of the Gas Fading Chamber for Acetates, the Warmth Tester, the Coolness Tester; helped bring the Flammability Tester to perfection; and engineered new testing equipment to solve textile problems as they arise.

Today this progressive program goes steadily forward. And we will welcome an opportunity to demonstrate our new equipment in operation at our Hoboken Laboratories. Manufacturers and Processers are cordially invited, not only to visit us, but to bring or submit samples of new materials which have been perfected or are in the process of development.

**The Following Literature Available on Request:**

- *Testing in Modern Industry*
- *Wool Grade Cards*
- *Testing Price List*
- *Core Testing for Determination of Wool Yield and Shrinkage*
- *Standard Textile Regains*
- *Your Guide to Wise Buying*

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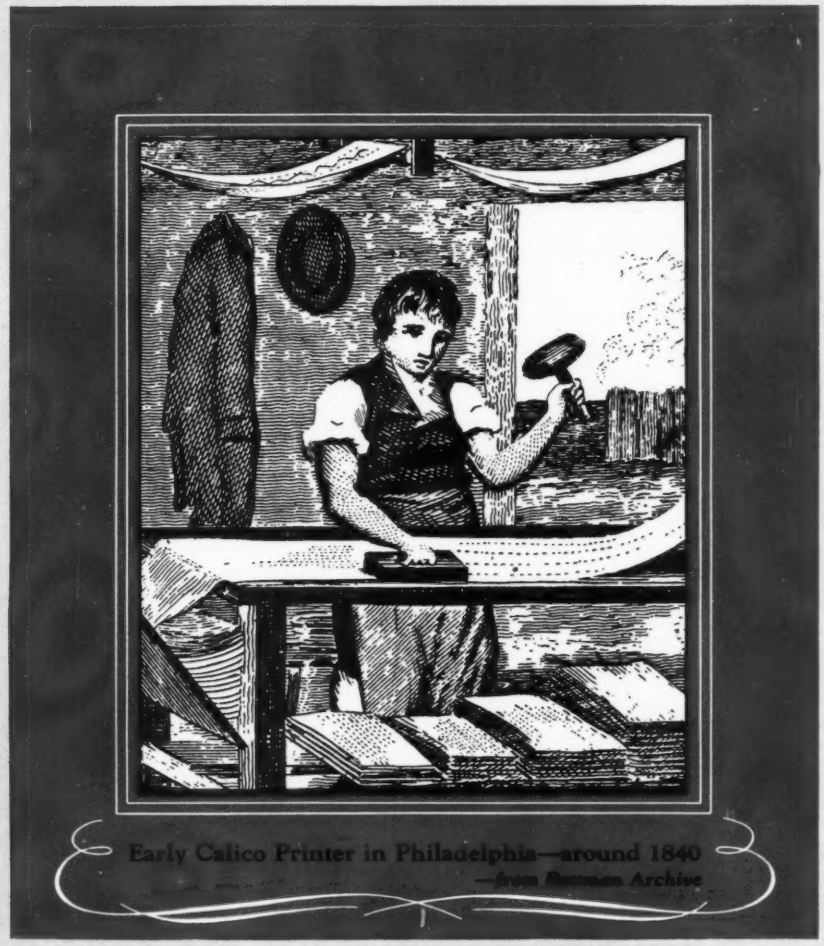

Early Calico Printer in Philadelphia—around 1840
—from Bettmann Archive

The speed and dependability of Rapidase in the de-sizing of cottons, rayons and mixed goods are important factors in preparing today's fabrics for dyeing, printing, and bleaching. Its effectiveness over a wide range of pH and temperature is especially desirable in modern finishing practice.

# RAPIDASE

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# VENANGO PNEUMATIC COMBINATION PACKAGE AND RAWSTOCK DYEING MACHINES

## with the Revolutionary V. E. One-Piece 3-Rib and 4-Rib Fluted Stainless Steel Spindle

The Venango Package and Rawstock Dyeing Machine is unique. It introduces a revolutionary pneumatic principle of operation and control which gives this machine many surpassing advantages in its work and far reaching benefits for its users.

The Venango Pneumatic Four Way Control Transfer Valve is a major factor in obtaining the increased efficiency, controlled uniformly, and greater economy of package dyeing results which the Venango machine insures.

Automatic control instrument panel is set at eye-level on its supporting framework with a recording thermometer which keeps an automatic record of temperature at every step of the process for each batch, a time clock with an alarm which can be set to warn the operator when his attention is needed to the batch. Two lights of different colors which indicate the direction of flow of dye liquor. A pressure gauge which tells the exact pressure in the dye tank at any time. A push button switch for starting and stopping the machine.

Another outstanding feature of Venango Design is the unique cover or lid. This new arrangement allows an easy raising or lowering of the lid.

Venango machines are produced in a variety of sizes to meet any capacity needed. Standard sizes are 60, 100, 200, 300 and 500 lb. capacity.

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# WHY DO CERFAK DETERGENTS COST YOU *Less?*

*Because* a little goes a long way. They do more work with less material, so you don't need to use as much as was required of inferior scouring agents sold on a price-per-pound basis.

That's what "better money value" means—the judging of a detergent on its cost per yard of fabric or pound of yarn processed, rather than on the initial price. When you compare CERFAK detergents either to soap or to less effective synthetic scouring materials, you'll find how *inexpensive* the Cerfak series really is.

They are supplied in liquid or flake form; for your particular scouring job, ask the Houghton Man to recommend the proper type of—

**HOUGHTON'S CERFAK**

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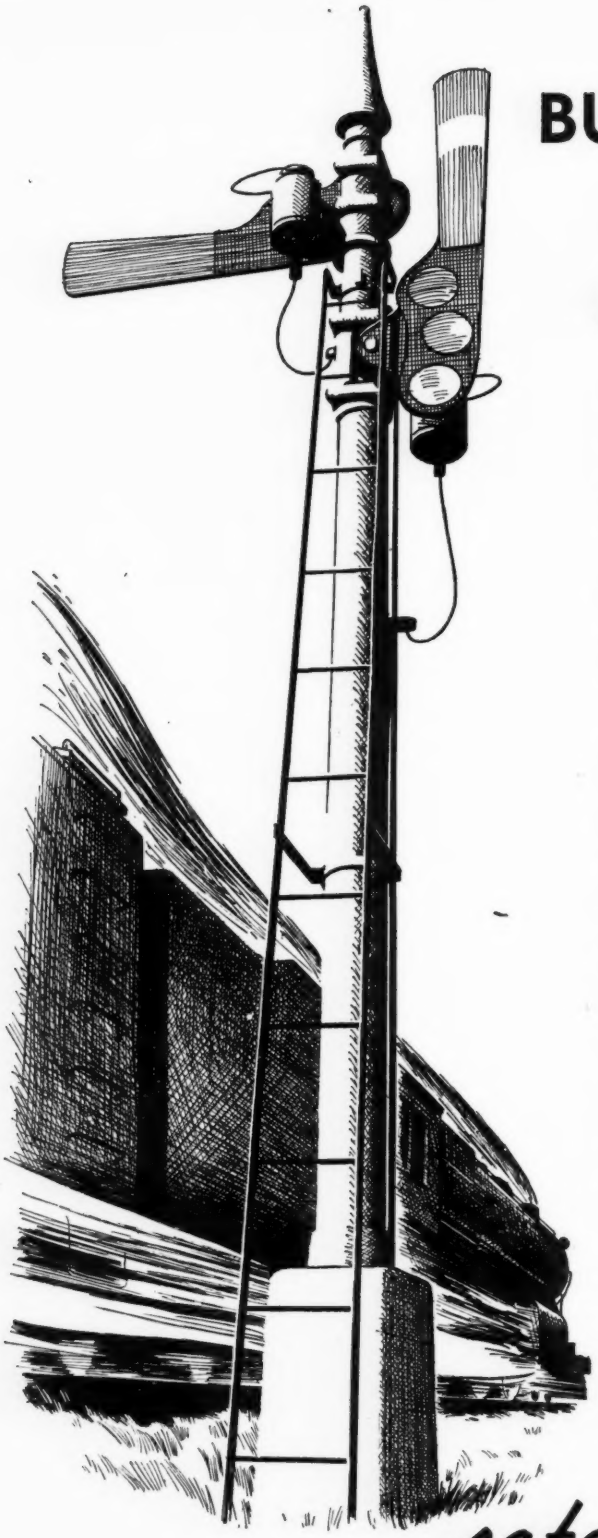

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# Safety!

Is it safe? There can be only one answer to that question when it concerns a processing agent. Even efficiency must get second consideration. If it isn't safe, it isn't efficient.

One of the qualities of Olate most highly valued by textile processors is its safety—to every fiber and fabric.

Olate is a pure, neutral, low titer textile soap, made from oils selected and refined with unusual care. Because it is highly resistant to oxidation and rancidity . . . because its fluid solutions penetrate fibers quickly and evenly and rinse out rapidly and thoroughly . . . Olate gives maximum protection against fabric discoloration and odor difficulties in finished goods.

From every standpoint—safety, efficiency, economy and saleable finished goods—you can't buy a better soap than Olate. Try it.

*PROCTER & GAMBLE*

# Olate

## *safe and efficient for every textile soap usage!*

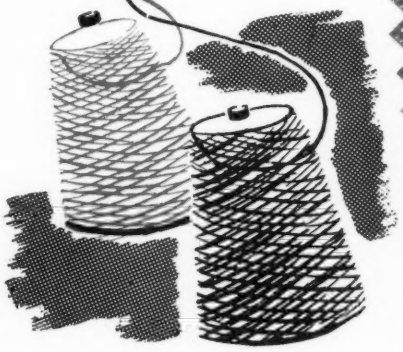
# Stanteosine

## CATIONIC SOFTENER

STANTEOSINE is a mill tested product giving extreme softness using small amounts. Its affinity for fibers gives it greater permanency than other types of softeners.

STANTEOSINE is stable in hard water and in solution of calcium, magnesium and other salts, making it very adaptable for heavy finishes, especially where weight is desired. It can be used over a wide pH range.

STANTEOSINE has various applications in the processing of silk, nylon, rayon, acetate, cotton and wool fabrics and all types of mixed goods. In the finishing of piece goods, and as a rinse after dyeing on raw stock, yarns and piece goods, STANTEOSINE gives a soft, silky finish free from odor.



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### INTRACOLS

Properties: Tan paste. Readily soluble in water. Effective in solutions of Glauber's salt, calcium chloride, magnesium chloride, sodium chloride, aluminum chloride, and aluminum acetate. Effective as an emulsifier for fatty acids.
Composition: Long-chain fatty acid amide containing multiple amino groups.
Class: Cationic surface-active agent; emulsifier.

### JANUSOL

Properties: Tan paste. Readily soluble in water. Effective under certain conditions as anionic or cationic surface-active agent. Stable in highly alkaline solutions, peroxide solutions, and hypochlorite solutions.
Compositions: Mixture of lauryl and myristyl esters containing both primary amino and sulfated groups.
Class: Wetting agent, dispersing agent (anionic and cationic).

### MULSOR

Properties: Pale amber-colored liquid. Stable to heat and light; neutral. Soluble in all proportions in petroleum oils.
Uses: Preparation of "soluble" oils.
Composition: Long-chain fatty acid ester containing multiple ether linkages.
Class: Emulsifier.

### TENSOL

Properties: Tan paste. Soluble in water. Unaffected by hard water, mineral acids, organic acids, caustic alkalies, and bleaching and mordanting agents.
Uses: Wettable sulphur and textile industries.
Composition: A sulfonated alkylnaphthalene ether.
Class: Wetting agent, dispersing agent, emulsifier.

### INTRAMINES

Properties: White to light-tan powder. Soluble in water.
Composition: "Sodium salt of sulfated lauryl and myristyl collamide."
Class: Wetting agent, dispersing agent, emulsifier, detergent.

### INTRAL 224

Properties: Viscous, straw-colored liquid. Soluble in water. Non-ionic and neutral. Suitable where electrolytes or organic salts are undesirable; active in highly alkaline solutions.
Compositions: Saturated long-chain fatty acid ester containing multiple ether linkages; very high molecular weight.
Class: Wetting agent, dispersing agent, emulsifier.

### INTRAL 229

Properties: Viscous, amber liquid. Soluble in water. Nonionic and neutral. Active in highly alkaline solutions.
Composition: Unsaturated long-chain fatty acid ester containing multiple ether linkages.
Class: Wetting agent, dispersing agent emulsifier.

### INTRAL 384

Data same as given for INTRAL 229.

### INTRAL A. E.

Properties: Viscous straw-colored liquid soluble in water. Non-ionic active in highly alkaline solutions.
Composition: Polar type compound with a high boiling point ph of approximately 10. 100% product containing no electrolytes.
Class: Wetting and stabilizing agent.

### NEGAMINE 142A

Properties: Cation active surface active substance having free basic amino groups.
Composition: Amino esters of the long-chain fatty acids.
Class: Wetting, finishing dispersing and emulsifier agent.

### AZOCEL B

A solubilizer for Diazotized, Developed, Naphthol, Acid and Acetate Dyes. Azocel B is a synthetic colloid, nonionic in property and neutral. Stable in hard water, stable to acids, alkalies, salts and other electrolytes. It is a powerful dispersing agent and has the property of forming molecular compounds with water insoluble products rendering them water soluble.

Azocel B has the unique characteristic of rendering excellent stability to Diazo compounds, eliminates crocking, rubbing in naphthol dyeing. It gives good dispersion of acid and acetate colors.

### SOFTENER FG

A durable type softener possessing a high degree of compatibility imparting a superior soft, smooth, supple hand. Its unique and important characteristics are resistance to hot iron scorching, will not discolor white goods, does not produce odors. Possess wetting ability, good dispersions and stable suspensions. Combines readily with synthetic resins and starches. It has resistance to repeated launderings and dry cleanings. Excellent for rayon yarns, fabrics and pile goods.

# AHCOVELS for the Soft Touch

## NOW MORE THAN EVER

AHCOVELS* have always brought good draping qualities and a smooth, flexible hand to cotton, rayon, wool, silk, actetates, nylon and other fabrics. It's the soft touch.

Now, Arnold Hoffman & Company has improved these matchless softeners so that they are better than ever.

AHCOVELS are now almost pure white in color, more resistant to yellowing, and more stable when subjected to heat.

Here is real news! The best substantive softeners on the market are improved and there is no increase in cost to you. Truly, finishing with AHCOVELS is a soft touch.

*Sample and further data on request.*

*Trademark Reg.

**ARNOLD, HOFFMAN & CO. INCORPORATED**

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ESTABLISHED 1815 • PLANTS AT DIGHTON, MASS. AND CHARLOTTE, N. C.

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NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE

# G-4 gives you ...

## MORE EFFECTIVE MILDEW-PROOFING

Outstanding for prevention of mildew, Givaudan's G-4* has proved its effectiveness as a *fungicidal, germicidal* and *antiseptic* agent. Further assurance of protection for your fabrics is found in G-4's *durability*...it is stable over a wide range of temperatures in processing and in use. G-4 also offers *economy* —it is effective in low concentration, and requires no modification of finishing procedures. It is *safe* to use in fabrics which contact the skin, being non-toxic and non-irritating. And G-4 imparts no appreciable color or weight to the fabric.

Capitalize on these plus values of G-4...improve your fabrics through effective mildew-proofing. Write today for further information.

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"BUY WISELY—BUY GIVAUDAN"

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A COMPLETE LINE OF

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15 PARK ROW • NEW YORK 7, N. Y.

# How "Memory" Sells Your Stockings

More than any other factor, it's appearance that sells hosiery. The *memory* in stockings finished with Filaseal Resin Finishes assures you that your stockings will be put on the hosiery counter looking fresh and new.

*Memory* causes stockings to return to their original shape no matter how they are handled or creased. Stockings with *memory* make a smooth and appealing package that looks better—sells faster.

Filaseal gives added body and increased snag resistance to stocking fabrics. This means that you can increase production of firsts at every step of the finishing operations—boarding, examining, pairing and folding. Fewer snags and pulls reduce the number of seconds and mean greater profit to you. Find out about Filaseal Resin Finishes today.

AMALGAMATED CHEMICAL CORP.
Philadelphia 34, Penna. : : Southern Representative
Robert A. Bruce, P. O. Box 35, Greensboro, N. C.

# Filaseal

**—to give your stockings *memory***

Stockings that look "handled" stay on the hosiery counter until all the "fresh" stockings are sold.

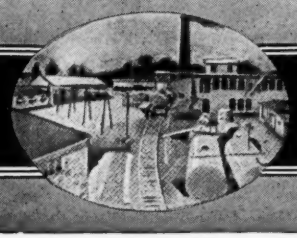
Stockings finished with Filaseal sell faster...stay smooth and fresh . . . resist snags and pulls.

"WAPACO" PRODUCTS
*Serve the Textile Industry*

DYESTUFFS
CHEMICALS
TEXTILE SOAPS
TEXTILE OILS
STRIPPING COMPOUNDS

**AUTOMATIC WOOL OIL B**

- Greater card production coupled with two-thirds less card stripping —final results amazing.
- Request a practical run.



Factory
LOWELL JCT.
MASS.

WATSON-PARK COMPANY
261 FRANKLIN STREET · BOSTON, MASS.

QUALITY RICHMOND PRODUCTS

Less Handling with

**AFTER CHLOR**

Eliminates 3 to 5 handlings

Bleach with
Hypochlorite
Rinse and Use

**AFTER CHLOR**

THAT'S ALL!

***Write for FREE Sample***

RICHMOND OIL, SOAP & CHEMICAL CO., Inc.
1041-43 FRANKFORD AVE., PHILADELPHIA 25, PA.

**BHAVANIDAS GANGADAS & CO.**
233-35, SAMUEL STREET
BOMBAY No. 3 (INDIA)

Cable Address
AGARBATI

Codes
Bentley's, Acme,
A.B.C. 6th

**DIRECT IMPORTERS STOCKISTS**

Are interested in the import of the following groups of Dyestuffs:

| | |
|---|---|
| DIRECT | ACID |
| BASIC | DIAZO |
| SULPHUR | VAT |
| NAPHTHOLS | BASES |
| FAST SALTS | RAPID FAST |

Also

**HEAVY AND FINE CHEMICALS**

and

**CAMPHOR**

***Offers Invited***

*Presenting The All-Star*

# SULPHONATIONS REVUE

## highlighting that great performer "MONOPOLE"

● Forty-five years experience in producing Sulphonations—that's in back of every one of these star-performers! The oldest producer in the business, Jacques Wolf & Co., takes a special pride in maintaining the strictest laboratory and production controls. That's the reason a Wolf product is always known for its uniform high quality, uniformly successful results.

As the accompanying list shows, we supply all standard sulphonated oils and tallows, and a variety of special products as well. Still heading the list is our famous Monopole Oil, known throughout the industry for its tested results in dyeing and finishing. Introduced over 45 years ago—and like every Wolf product, constantly improved — this great double-sulphonated oil is still leader in its field!

Wolf offers you Sulphonations *as you want them*—in variety, value and performance.

### LOOK AT THIS CAST!

| | |
|---|---|
| Monopole Oil | Sulphonated Esters |
| Monopole Oil M.D.D. | Sulphonated Neatsfoot Oil |
| Monopole Brilliant Oil | Sulphonated Oleic Acid |
| Sulphonated Amides | Sulphonated Olevene |
| Sulphonated Castor Oil | Sulphonated Red Oil |
| Sulphonated Cocoanut Oil | Sulphonated Tallow |
| Sulphonated Corn Oil | Emulsified Mineral Oil |

Soluble Pine Oil

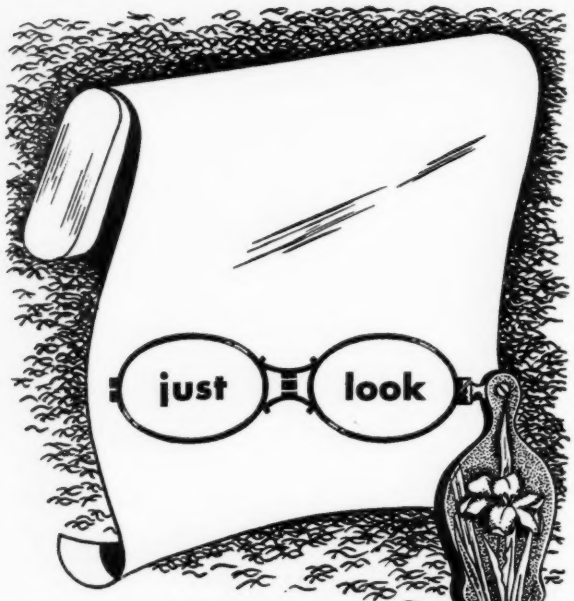
*And combinations with all types of solvents*

**JACQUES WOLF & CO.**

*Chemicals* PASSAIC, N. J.

OTHER PLANTS: CARLSTADT, N. J. • LOS ANGELES, CALIF.

WAREHOUSES: Providence, R. I., Philadelphia, Pa., Utica, N. Y., Chicago, Ill., Greenville, S. C., Chattanooga, Knoxville, Tenn.




## how white!

Bleached as white as driven snow. Expect these superior, dazzling whites when you use Star Silicate to stabilize your peroxide bleach. With Star you're four ways surer:

**1**
Star is brilliantly clear; no floc to speed up peroxide decomposition.

**2**
Star is stable to dilution and heat so that it does not "break" to cause decomposition or deposits.

**3**
Star has reserve alkali that extends the working life of the bleach solution.

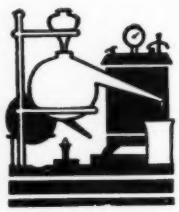
**4**
Star is especially purified to remove harmful iron and titanium found in ordinary silicates.

Star's long record of successful use covers all fibers—cotton, wool, silk, rayon mixtures, and both kier and continuous bleaching. See for yourself how Star improves bleaching results. We'll be happy to cooperate with samples and advice.

**PHILADELPHIA QUARTZ COMPANY**
Dept. A, 127 S. Third St., Phila. 6, Pa.

**star** **SILICATE OF SODA**

# AQUAKAL #77



## A SYNTHETIC AMINE DETERGENT

•

REPLACES soap or portion of your Soap—for SCOURING piece goods, Cotton, Wool, Rayon, Acetate or Nylon.

Brighter colors due to the
**PENETRATING and LEVELING**
qualities.

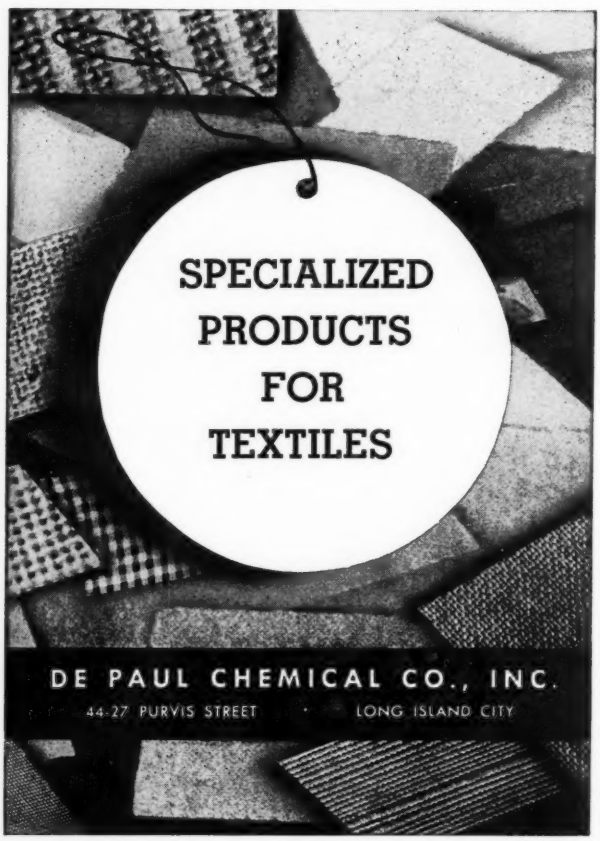
•

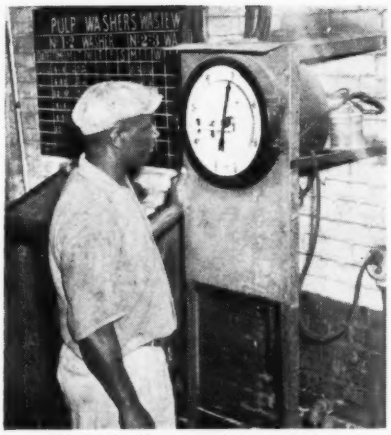
*Excellent for Soaping Vats — not affected by hard water.*

•

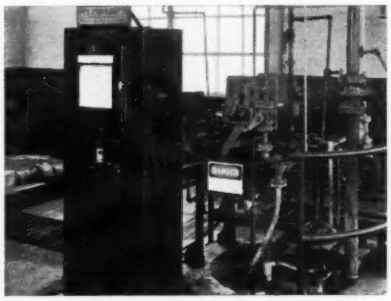
HYDROXY HAND CREAM—for the operators handling nylon to keep their hands smooth.

**Kali** MANUFACTURING COMPANY
*Manufacturing Chemists*
427 MOYER ST. PHILADELPHIA 25, PA.





Model R Micromax for pH of hot wash liquor after char filtering, National Sugar Refining Co.



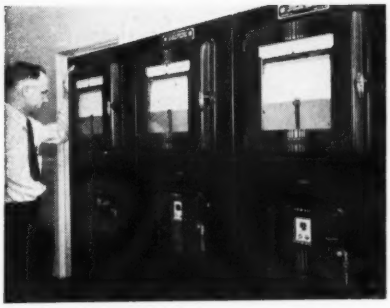
Controlling pH of waste which may be either acid or alkaline, Bakelite Corp.

# pH INSTRUMENTS To Match Most Needs

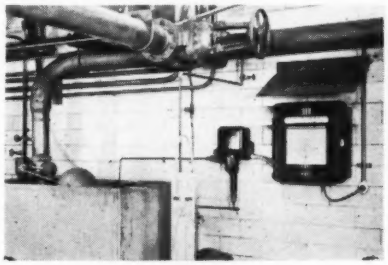
As pH problems in plant and laboratory grow more important, the Micromax family of instruments for recording and control is increasingly depended on to meet requirements with accuracy and dependability.

Most popular control equipment is a Strip-Chart Micromax with its own electric valve-drive, and with glass electrode selected for the particular situation. This instrument requires minimum attention, because it standardizes itself, and its chart and ink last for a month or more in usual operation. Its wide chart appeals to the record-minded engineer.

If you will send a chemical engineering description of pH conditions, we can probably recommend specific instrumentation. Or request Catalog N-96(1), if you prefer.



Recording pH of paper stock, with Micromax instruments, Mosinee Paper Mills Co.



Micromax pH recording equipment, Duquesne Light Co.

LEEDS & NORTHRUP COMPANY, 4965 STENTON AVE., PHILA., PA.

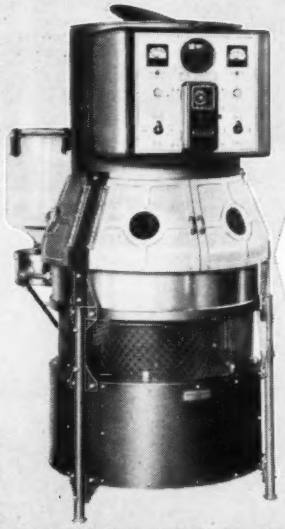
LEEDS & NORTHRUP

MEASURING INSTRUMENTS · TELEMETERS · AUTOMATIC CONTROLS · HEAT-TREATING FURNACES

Jrl Ad N-96(5a)

# FADE-OMETER

**for accelerated color fading**



• Originated and made solely by Atlas. Used all over the world and accepted as the standard color testing machine by the textile industry for over a quarter of a century.

Specimens are rotated around the Atlas Enclosed Violet Carbon Arc—the closest approach to natural sunlight. Temperature automatically controlled. No loss of light intensity of arc during life of machine.

ATLAS ELECTRIC DEVICES CO., 361 W. Superior Street, Chicago, Ill.

# ATLAS-OMETERS

WEATHER-OMETER ★ LAUNDER-OMETER ★ FADE-OMETER

# CHARI & RAM

(*Established* 1916)

Post Box No. 38,

MADURA, SOUTH INDIA

•

Leading Importers of Dyes and Chemicals

Branches and Agents all over India

•

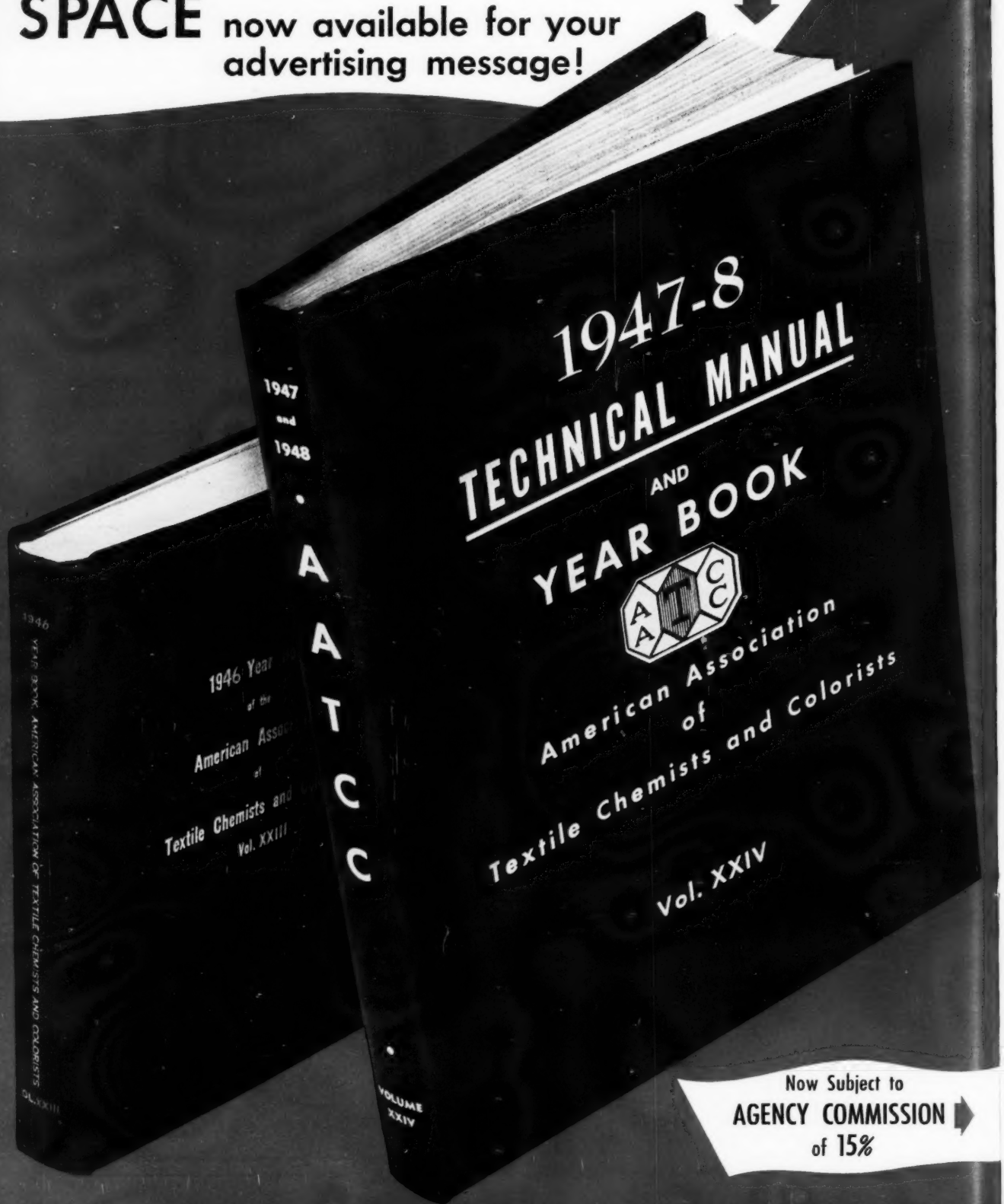
*Offers invited*

*from Manufacturers and Shippers*

Cable Address:
"THAMARAI," Madura

Phone No. 69

# Over 100% MORE TYPE SPACE now available for your advertising message!




Now Subject to
**AGENCY COMMISSION**
of 15%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FROM time to time members of the American Association of Textile Chemists and Colorists have suggested that changes be made in the physical makeup of their volume, namely, to make the contents easier to read and the book more comfortable to handle. Also, a change in the title was suggested, as the term "Year Book" was thought to be too general and one that did not suggest the valuable contents of the book. All of these and other suggestions were acted upon by the Publications Committee of the Association who approved them as follows.

1. **There will be no volume published during 1947, but the edition which will appear during 1948 will bear the year date 1947-8.**
2. **The present title "Year Book" will be changed to "TECHNICAL MANUAL and YEAR BOOK," the emphasis being placed upon the first two words.**
3. **The type page size will be increased to 7 x 10 which is the same as the American Dyestuff Reporter and the trim size will be 8⅛ x 11¼.**
4. **This increase in size from 4½ x 7 to 7 x 10 will make product advertising more valuable inasmuch as it increases copy space over 100% and permits the use of regular publication plates, thereby eliminating the expense of making special sized cuts.**
5. **Instead of the single column type page, the text pages of the new volume will be set three columns to the page, which will definitely be easier to read.**

In view of the fact that no volume will be published during 1947, the advertising placed in the 1947-1948 edition will be billed in 1948 as follows:

Full page—$200. Half page—$125.
Color—$60 net. Bleed—10% additional

## MECHANICAL REQUIREMENTS

Full page type size—7" wide x 10" deep

Half page vertical—3⅜" wide x 10" deep

Half page horizontal—7" wide x 4¾" deep

Bleed—8¼" x 11½"

Screen—110

Forms close May 1, 1948

Regular 7" x 10" advertising plates can be used—also regular vertical and horizontal half page plates. No quarter pages will be accepted.

★

## THE INDEX OF COMPANIES WHO USED SPACE IN THE LAST EDITION IS A "WHO'S WHO" IN THE AMERICAN TEXTILE CHEMICAL INDUSTRY.

★

## INDEX TO ADVERTISERS


A
Aktivin Division, Heyden Chem. Corp., The
Alco Oil & Chemical Corp.
Alrose Chemical Co.
Althouse Chemical Co.
Amalgamated Chemical Co.
American Aniline & Extract Co.
American Aniline Products Co.
American Cyanamid Company
American Dyestuff Reporter
American Dyewood Co.
American Viscose Corp.
Analyte Instruments, Inc.
Aqua Sec Corporation
Arabol Mfg. Co.
Aridye Corp.
Arkansas Co., Inc.
Arnold, Hoffman & Co., Inc.
Atlas Color & Chemical Co.
Atlas Electric Devices Co.
Augusta Chemical Company

B
Barnes Tex. Associates, Inc.
Becco Sales Corp.
Bernard Color & Chemical Corp.
Bick & Co., Inc.
Borden & Remington Co.
Borne Scrymser Co.
Bryant Chemical Corporation
Burkart-Schier Chemical Co.
Butterworth, H. W., & Sons Co.

C
Calco Chemical Division, American Cyanamid Co.
Calgon, Inc.
Campbell, John, & Co., Inc.
Carbic Color & Chemical Co., Inc.
Carbide & Carbon Chemical Corp.
Celanese Corp. of America
Chemicolloid Laboratories, Inc.
Ciba Co., Inc.
Clarion Chemical Corp.
Colloids, Inc.
Commonwealth Color & Chemical Co.
Continental Chemical Co.

D
Darpro Chemical Corp.
Dexter Chemical Corp.
Dow Chemical Co.
Draper Soap Co.
Du Pont de Nemours & Co., Inc., E. I.
Dyestuff Division
Electrochemicals Dept.

E
Emery Industries, Inc.

G
Gaston County Dyeing Machine Co.
Geigy Co., Inc.
General Chemical Company
General Dyestuff Corp.
Givaudan-Delawanna, Inc.
Glyco Products Co., Inc.

H
Harrison, A., & Co., Inc.
Hart Products Corp.
Hercules Powder Company
Howe & French, Inc.
Houghton & Co., E. F.
Hunter Machine Co., James

I
Industrial Dyestuff Co.

K
Kali Manufacturing Co.

L
L. & R. Organic Products Co., Inc.
Laurel Soap Mfg. Co., Inc.
Leatex Chemical Company
Lewis, John D., Inc.
Lowell Textile Institute

M
MacMillan Company, The
Mann, George & Co., Inc.
Mathieson Alkali Wks., Inc.
May, Otto B., Inc.
Maywood Chemical Works
Metakloth Company
McCabe Chemical Co.
M.K.M. Hosiery Mills, Inc.
Monsanto Chemical Co.
Morton Machine Works

N
National Aniline Division, Allied Chemical & Dye Corp.
National Oil Products Company
Nova Chemical Corp.
Nyanza Color & Chemical Co., Inc.

O
Onyx Oil & Chemical Co.

P
Pabst Sales Co.
Paisley Products, Inc., of N. Y.
Peerless Color Co.
Penna. Salt Mfg. Co.
Pomona Mfg. Company
Prior Chemical Corp.
Procter & Gamble
Proctor & Schwartz, Inc.

R
Refined Products Corp.
Richmond Oil, Soap & Chemical Co.
Rodney Hunt Machine Co.
Rohm & Haas Co.
Rosentwist & Gorner
Royce Chemical Co.
Ruger Textile Color Co.
Rumford Chemical Wks.

S
Sagamore Color & Chemical Co.
Sandoz Chemical Works, Inc.
Scholler Bros., Inc.
Scott Testers, Inc.
Siegel Chemical Co., Inc.
Solvay Sales Corp.
Somerset Color & Chemical Co., Inc.
South Florida Test Service
Speizman Co., Inc., Morris
Standard Brands, Inc.
Standard Chemical Products, Inc.
Stein, Hall & Co., Inc.
Surpass Chemical Co., Inc.
Sylvania Div., American Viscose Corp.
Synthetic Chemicals, Inc.

T
Tennessee Eastman Corp.
Tex-Chem. Co.
Textile Aniline & Chemical Co., Inc.
Textile Book Publishers, Inc.
Titan Chemical Products, Inc.
Thomas Co., Arthur H.

U
Ultra Chemical Works, Inc.
United Chemical Products Corp.
United Piece Dye Works
United States Dyestuff Corp.

V
Van Vlaanderen Machine Co.

W
Wallerstein Co., Inc.
Warwick Chemical Co.
Watson-Park Co.
Welch, Holme & Clark Co., Inc.
Wolf & Co., Jacques

Y
Young Aniline Wks., Inc.

Z
Zinsser & Co., Inc.
Zurn, O. F., Co.


**Send your space reservation to the Howes Publishing Company, One Madison Avenue, New York 10, New York, who act as Agents for the American Association of Textile Chemists and Colorists.**

QUALITY RICHMOND PRODUCTS

# MERCOPEN

For mercerizing

•

The mercerizing penetrant which is water soluble

Faster Penetration

Easier rinsibility

No scum in caustic

*Ask for samples*

RICHMOND OIL, SOAP & CHEMICAL CO., Inc.

1041-43 FRANKFORD AVE., PHILADELPHIA 25, PA.

# LOGWOOD BLACK

FOR

LEATHER • WOOL • SILK

COTTON • FUR • HAIR

PIGMENTS

**DEPENDABLE SOURCE OF SUPPLY**

**ECONOMICAL - RELIABLE**

LOGWOOD HEMATINE QUEBRACHO

TANNIC ACID SUMAC QUERCITRON

FUSTIC GAMBIER FLAVINE

**YOUNG EXTRACTS--SERVING THE INDUSTRY SINCE 1869**

THE J. S. **YOUNG** COMPANY

OFFICE and FACTORY

2701-2733 Boston St., Baltimore, Md.

**Ten ways to use the Gurley Permeometer***

Here's the versatile instrument for quickly and accurately measuring air permeability of fabrics which permit passage of from 1 to 400 cubic feet of air per square foot area at a pressure drop of 0.5" of water. Write for Bulletin No. 1600. W. & L. E. Gurley, 512 Fulton, Troy, N. Y.

**GURLEY**

*Scientific Instrument Makers Since 1845*

*Conforms to ASTM "Tent. Meth. of Testing for Air Permeability of Text. Fabrics" D737-43T.

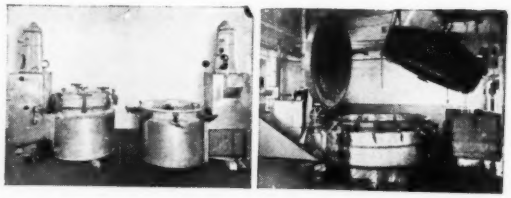
**Use the Gurley Permeometer for measuring:**

1. *Wind-proofness* of cloth.
2. *Quality* of filter cloth.
3. *Use requirement* of cloth intended to resist or pass air.
4. *Water-resistant* properties.
5. *Coolness* or *warmth* of clothing material.
6. *Construction* of cloth.
7. *Penetration* into cloth of various coatings.
8. *Retention of fillers, starch and sizing* in cloth after laundering or cleaning.
9. *Compactness, nap* or *fiber arrangement* in cloth after fulling, washing, sizing or other treatments.
10. *Amount of wear* after abrasion tests.

*The Fleet Line*

**STAINLESS STEEL STOCK DYE KETTLE**

Patent Numbers 2410214, 2275818 and 1813784



50 lbs. Capacity 1,000 lbs. Capacity

**In Sizes To Meet Your Production Requirements**

Fleet Line Stainless Steel Stock Dye Kettles are made with normal rated capacities of 50 lbs., 250 lbs., 500 lbs., and 1000 lbs. Each size may be loaded 50% under capacity, or considerably over capacity, on certain types of stock, without loss of efficiency.

Only with Fleet Line Stock Dye Kettles can you get ALL of these features, for many of them are protected by patents.

**ADVANTAGES**

1. Stock undisturbed in kettle. Comes out in open, lofty condition.
2. Complete and uniform penetration of dye liquor.
3. Stock unloaded in cake form on false bottom, by electric or air hoist.
4. Temperature, pressure and depth indicators.
5. Safety sampling cover. Will not open when machine is in operation.
6. Unit construction keeps outside pipes and fittings to minimum.
7. Vertical pump requires no packing.
8. Vertical motor on top of machine away from water and dirt.

RIGGS AND LOMBARD INCORPORATED

FOOT OF SUFFOLK ST., LOWELL, MASS.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 OF AMERICAN DYESTUFF REPORTER published bi-weekly at New York, N. Y., for October 1, 1947.

State of New York, County of New York, ss.:

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Alfred P. Howes, who, having been duly sworn according to law, deposes and says that he is the Publisher of the AMERICAN DYESTUFF REPORTER, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily, weekly, semi-weekly or tri-weekly newspaper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946, (section 537, Postal Laws and Regulations) printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Alfred P. Howes, One Madison Ave., New York, N. Y.; Editor—Dr. Louis A. Olney, 118 Riverside St., Lowell, Mass.; Managing Editor—Norman A. Johnson, One Madison Ave., New York, N. Y.; Business Manager—None.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Owner: Howes Publishing Company, Inc., One Madison Ave., New York, N. Y.

Stockholders:

Alfred P. Howes, One Madison Ave., New York, N. Y.; Cecile R. Howes, State Line, Mass.; N. H. Hiller, Carbondale, Pa.; Louis A. Olney, Lowell, Mass.; Jos. L. Schroeder, Hartsdale, N. Y.; Myron D. Reeser, Maplewood, N. J.; H. F. Crawford, Baldwin, L. I.; L. R. Keeffe, West Redding, Conn.; C. E. Tolsdorf, Forest Hills, L. I.; D. H. Singleton, Washington, D. C.; Shirley I. Reeser, Maplewood, N. J.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

ALFRED P. HOWES, Publisher.

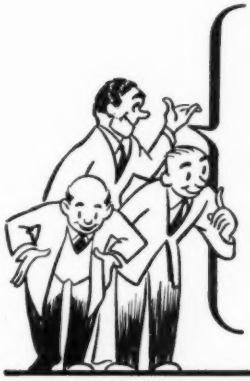
Sworn to and subscribed before me this first day of October, 1947.

(SEAL) CAROLINE ESSENBREIS

Notary Public, Kings County, Clerk's No. 192, Register's No. 51-E-9, N. Y. Co. Clk.'s No. 293, Reg. No. 50-E-9. (My commission expires March 30th, 1949.)


## *"Here's What We Want in a Dyebox,"*

*said Textile Dyers*



1. Less time for loading, heating, lacing, doffing, cleaning.
2. Greater saving of steam and water.
3. Production of cleaner, higher quality work.

## *And Here's the Box We Designed*

As specialists in fabricating stainless steel textile equipment, we present this new dyebox for quality dyeing. It assures all the time and money savings that dyers demand in new equipment — all the convenience of an open type box combined with the advantages of a fully enclosed box.

## *The* NEW BLICKMAN DYEBOX

*Stainless Steel and Fully Enclosed*

Write for further information

**S. BLICKMAN, INC.**

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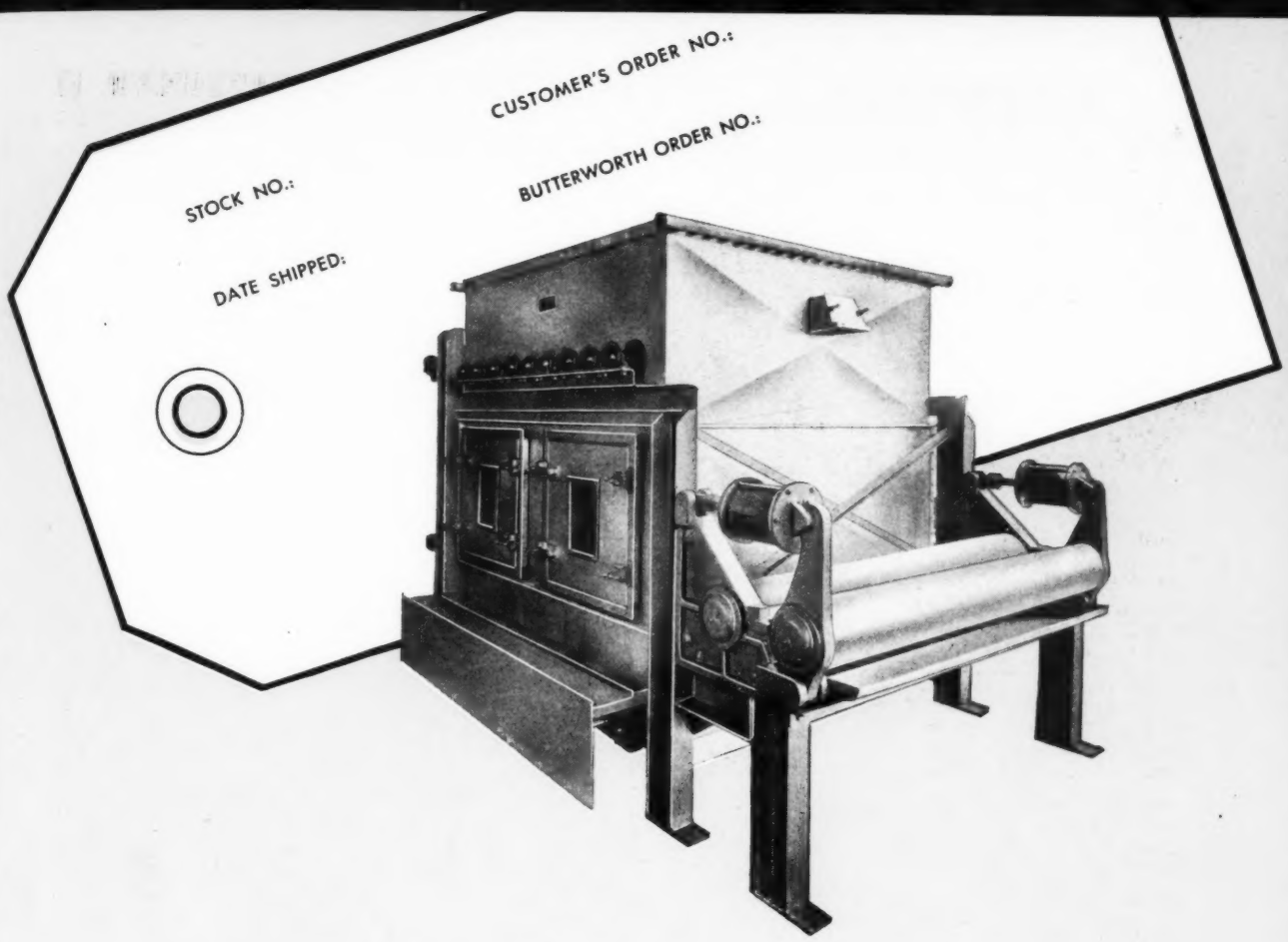


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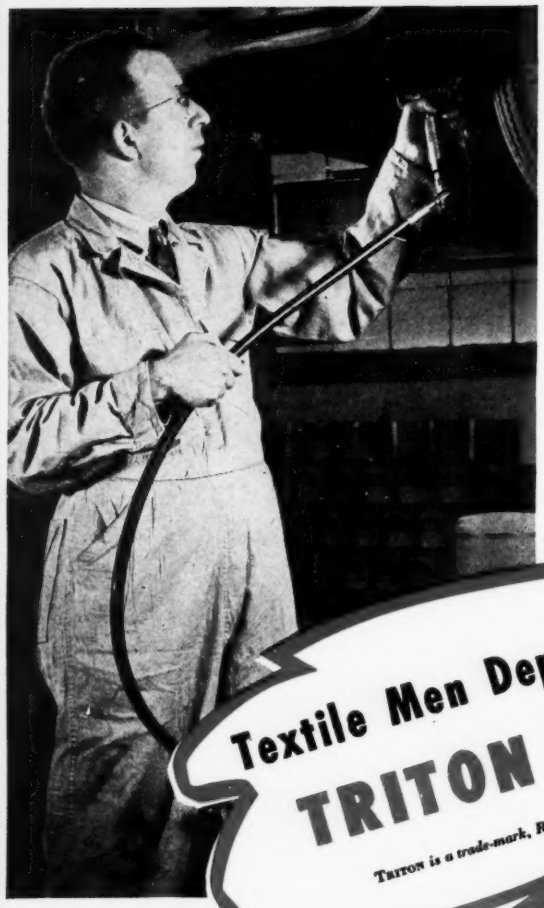

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